SEQUENCE LISTING

<110> HAMILTON, STEPHEN

<120> EXPRESSION OF CLASS 2 MANNOSIDASE AND CLASS III
MANNOSIDASE IN LOWER EUKARYOTIC CELLS

<130> GFI/107

<140> 10/616,082
<141> 2003-07-08

<150> 10/371,877
<151> 2003-02-20

<150> 09/892,591
<151> 2001-06-27

<150> 60/214,358
<151> 2000-06-28

<150> 60/215,638
<151> 2000-06-30

<150> 60/279,997
<151> 2001-03-30

<150> PCT/US02/41510
<151> 2002-12-24

<150> 60/344,169
<151> 2001-12-27

<160> 119

<170> PatentIn Ver. 3.2

<210> 1
<211> 1968
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)..(1965)

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Met Pro Val Gly Gly Leu Leu Pro Leu Phe Ser Ser Pro Gly Gly Gly
  1   5   10   15

ggc ctg ggc agt ggc ctg ggc ggg ggg ctt ggc ggc ggg agg aag ggg   96
Gly Leu Gly Ser Gly Leu Gly Gly Gly Leu Gly Gly Gly Arg Lys Gly
              20   25   30

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tct ggc ccc gct gcc ttc cgc ctc acc gag aag ttc gtg ctg ctg ctg     144
Ser Gly Pro Ala Ala Phe Arg Leu Thr Glu Lys Phe Val Leu Leu Leu
        35                  40                  45

gtg ttc agc gcc ttc atc acg ctc tgc ttc ggg gca atc ttc ttc ctg     192
Val Phe Ser Ala Phe Ile Thr Leu Cys Phe Gly Ala Ile Phe Phe Leu
        50                  55                  60

cct gac tcc tcc aag ctg ctc agc ggg gtc ctg ttc cac tcc aac cct     240
Pro Asp Ser Ser Lys Leu Leu Ser Gly Val Leu Phe His Ser Asn Pro
65                  70                  75                  80

gcc ttg cag ccg ccg gcg gag cac aag ccc ggg ctc ggg gcg cgt gcg     288
Ala Leu Gln Pro Pro Ala Glu His Lys Pro Gly Leu Gly Ala Arg Ala
            85                  90                  95

gag gat gcc gcc gag ggg aga gtc cgg cac cgc gag gaa ggc gcg cct     336
Glu Asp Ala Ala Glu Gly Arg Val Arg His Arg Glu Glu Gly Ala Pro
        100                 105                 110

ggg gac cct gga gct gga ctg gaa gac aac tta gcc agg atc cgc gaa     384
Gly Asp Pro Gly Ala Gly Leu Glu Asp Asn Leu Ala Arg Ile Arg Glu
        115                 120                 125

aac cac gag cgg gct ctc agg gaa gcc aag gag acc ctg cag aag ctg     432
Asn His Glu Arg Ala Leu Arg Glu Ala Lys Glu Thr Leu Gln Lys Leu
    130                 135                 140

ccg gag gag atc caa aga gac att ctg ctg gag aag gaa aag gtg gcc     480
Pro Glu Glu Ile Gln Arg Asp Ile Leu Leu Glu Lys Glu Lys Val Ala
145                 150                 155                 160

cag gac cag ctg cgt gac aag gat ctg ttt agg ggc ttg ccc aag gtg     528
Gln Asp Gln Leu Arg Asp Lys Asp Leu Phe Arg Gly Leu Pro Lys Val
            165                 170                 175

gac ttc ctg ccc ccc gtc ggg gta gag aac cgg gag ccc gct gac gcc     576
Asp Phe Leu Pro Pro Val Gly Val Glu Asn Arg Glu Pro Ala Asp Ala
        180                 185                 190

acc atc cgt gag aag agg gca aag atc aaa gag atg atg acc cat gct     624
Thr Ile Arg Glu Lys Arg Ala Lys Ile Lys Glu Met Met Thr His Ala
        195                 200                 205

tgg aat aat tat aaa cgc tat gcg tgg ggc ttg aac gaa ctg aaa cct     672
Trp Asn Asn Tyr Lys Arg Tyr Ala Trp Gly Leu Asn Glu Leu Lys Pro
    210                 215                 220

ata tca aaa gaa ggc cat tca agc agt ttg ttt ggc aac atc aaa gga     720
Ile Ser Lys Glu Gly His Ser Ser Ser Leu Phe Gly Asn Ile Lys Gly
225                 230                 235                 240
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gct aca ata gta gat gcc ctg gat acc ctt ttc att atg ggc atg aag    768
Ala Thr Ile Val Asp Ala Leu Asp Thr Leu Phe Ile Met Gly Met Lys
            245             250                 255

act gaa ttt caa gaa gct aaa tcg tgg att aaa aaa tat tta gat ttt    816
Thr Glu Phe Gln Glu Ala Lys Ser Trp Ile Lys Lys Tyr Leu Asp Phe
            260             265                 270

aat gtg aat gct gaa gtt tct gtt ttt gaa gtc aac ata cgc ttc gtc    864
Asn Val Asn Ala Glu Val Ser Val Phe Glu Val Asn Ile Arg Phe Val
            275             280                 285

ggt gga ctg ctg tca gcc tac tat ttg tcc gga gag gag ata ttt cga    912
Gly Gly Leu Leu Ser Ala Tyr Tyr Leu Ser Gly Glu Glu Ile Phe Arg
        290             295                 300

aag aaa gca gtg gaa ctt ggg gta aaa ttg cta cct gca ttt cat act    960
Lys Lys Ala Val Glu Leu Gly Val Lys Leu Leu Pro Ala Phe His Thr
305             310             315                 320

ccc tct gga ata cct tgg gca ttg ctg aat atg aaa agt ggg atc ggg   1008
Pro Ser Gly Ile Pro Trp Ala Leu Leu Asn Met Lys Ser Gly Ile Gly
                325             330                 335

cgg aac tgg ccc tgg gcc tct gga ggc agc agt atc ctg gcc gaa ttt   1056
Arg Asn Trp Pro Trp Ala Ser Gly Gly Ser Ser Ile Leu Ala Glu Phe
            340             345                 350

gga act ctg cat tta gag ttt atg cac ttg tcc cac tta tca gga gac   1104
Gly Thr Leu His Leu Glu Phe Met His Leu Ser His Leu Ser Gly Asp
            355             360                 365

cca gtc ttt gcc gaa aag gtt atg aaa att cga aca gtg ttg aac aaa   1152
Pro Val Phe Ala Glu Lys Val Met Lys Ile Arg Thr Val Leu Asn Lys
            370             375                 380

ctg gac aaa cca gaa ggc ctt tat cct aac tat ctg aac ccc agt agt   1200
Leu Asp Lys Pro Glu Gly Leu Tyr Pro Asn Tyr Leu Asn Pro Ser Ser
385             390                 395                 400

gga cag tgg ggt caa cat cat gtg tcg gtt gga gga ctt gga gac agc   1248
Gly Gln Trp Gly Gln His His Val Ser Val Gly Gly Leu Gly Asp Ser
                405             410                 415

ttt tat gaa tat ttg ctt aag gcg tgg tta atg tct gac aag aca gat   1296
Phe Tyr Glu Tyr Leu Leu Lys Ala Trp Leu Met Ser Asp Lys Thr Asp
            420             425                 430

ctc gaa gcc aag aag atg tat ttt gat gct gtt cag gcc atc gag act   1344
Leu Glu Ala Lys Lys Met Tyr Phe Asp Ala Val Gln Ala Ile Glu Thr
            435             440                 445
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cac ttg atc cgc aag tca agt ggg gga cta acg tac atc gca gag tgg    1392
His Leu Ile Arg Lys Ser Ser Gly Gly Leu Thr Tyr Ile Ala Glu Trp
    450                 455                 460

aag ggg ggc ctc ctg gaa cac aag atg ggc cac ctg acg tgc ttt gca    1440
Lys Gly Gly Leu Leu Glu His Lys Met Gly His Leu Thr Cys Phe Ala
465                 470                 475                 480

gga ggc atg ttt gca ctt ggg gca gat gga gct ccg gaa gcc cgg gcc    1488
Gly Gly Met Phe Ala Leu Gly Ala Asp Gly Ala Pro Glu Ala Arg Ala
                485                 490                 495

caa cac tac ctt gaa ctc gga gct gaa att gcc cgc act tgt cat gaa    1536
Gln His Tyr Leu Glu Leu Gly Ala Glu Ile Ala Arg Thr Cys His Glu
                500                 505                 510

tct tat aat cgt aca tat gtg aag ttg gga ccg gaa gcg ttt cga ttt    1584
Ser Tyr Asn Arg Thr Tyr Val Lys Leu Gly Pro Glu Ala Phe Arg Phe
            515                 520                 525

gat ggc ggt gtg gaa gct att gcc acg agg caa aat gaa aag tat tac    1632
Asp Gly Gly Val Glu Ala Ile Ala Thr Arg Gln Asn Glu Lys Tyr Tyr
    530                 535                 540

atc tta cgg ccc gag gtc atc gag aca tac atg tac atg tgg cga ctg    1680
Ile Leu Arg Pro Glu Val Ile Glu Thr Tyr Met Tyr Met Trp Arg Leu
545                 550                 555                 560

act cac gac ccc aag tac agg acc tgg gcc tgg gaa gcc gtg gag gct    1728
Thr His Asp Pro Lys Tyr Arg Thr Trp Ala Trp Glu Ala Val Glu Ala
                565                 570                 575

cta gaa agt cac tgc aga gtg aac gga ggc tac tca ggc tta cgg gat    1776
Leu Glu Ser His Cys Arg Val Asn Gly Gly Tyr Ser Gly Leu Arg Asp
                580                 585                 590

gtt tac att gcc cgt gag agt tat gac gat gtc cag caa agt ttc ttc    1824
Val Tyr Ile Ala Arg Glu Ser Tyr Asp Asp Val Gln Gln Ser Phe Phe
            595                 600                 605

ctg gca gag aca ctg aag tat ttg tac ttg ata ttt tcc gat gat gac    1872
Leu Ala Glu Thr Leu Lys Tyr Leu Tyr Leu Ile Phe Ser Asp Asp Asp
    610                 615                 620

ctt ctt cca cta gaa cac tgg atc ttc aac acc gag gct cat cct ttc    1920
Leu Leu Pro Leu Glu His Trp Ile Phe Asn Thr Glu Ala His Pro Phe
625                 630                 635                 640

cct ata ctc cgt gaa cag aag aag gaa att gat ggc aaa gag aaa tga    1968
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Gly Leu Gly Ser Gly Leu Gly Gly Gly Leu Gly Gly Gly Arg Lys Gly
            20   25   30

Ser Gly Pro Ala Ala Phe Arg Leu Thr Glu Lys Phe Val Leu Leu Leu
        35   40   45

Val Phe Ser Ala Phe Ile Thr Leu Cys Phe Gly Ala Ile Phe Phe Leu
     50   55   60

Pro Asp Ser Ser Lys Leu Leu Ser Gly Val Leu Phe His Ser Asn Pro
 65   70   75   80

Ala Leu Gln Pro Pro Ala Glu His Lys Pro Gly Leu Gly Ala Arg Ala
                85   90   95

Glu Asp Ala Ala Glu Gly Arg Val Arg His Arg Glu Glu Gly Ala Pro
            100   105   110

Gly Asp Pro Gly Ala Gly Leu Glu Asp Asn Leu Ala Arg Ile Arg Glu
            115   120   125

Asn His Glu Arg Ala Leu Arg Glu Ala Lys Glu Thr Leu Gln Lys Leu
        130   135   140

Pro Glu Glu Ile Gln Arg Asp Ile Leu Leu Glu Lys Glu Lys Val Ala
145   150   155   160

Gln Asp Gln Leu Arg Asp Lys Asp Leu Phe Arg Gly Leu Pro Lys Val
                165   170   175

Asp Phe Leu Pro Pro Val Gly Val Glu Asn Arg Glu Pro Ala Asp Ala
            180   185   190

Thr Ile Arg Glu Lys Arg Ala Lys Ile Lys Glu Met Met Thr His Ala
        195   200   205

Trp Asn Asn Tyr Lys Arg Tyr Ala Trp Gly Leu Asn Glu Leu Lys Pro
    210   215   220

Ile Ser Lys Glu Gly His Ser Ser Ser Leu Phe Gly Asn Ile Lys Gly
225   230   235   240

Ala Thr Ile Val Asp Ala Leu Asp Thr Leu Phe Ile Met Gly Met Lys
                245   250   255

Thr Glu Phe Gln Glu Ala Lys Ser Trp Ile Lys Lys Tyr Leu Asp Phe
             260   265   270

Asn Val Asn Ala Glu Val Ser Val Phe Glu Val Asn Ile Arg Phe Val
             275   280   285

Gly Gly Leu Leu Ser Ala Tyr Tyr Leu Ser Gly Glu Glu Ile Phe Arg
             290   295   300

Lys Lys Ala Val Glu Leu Gly Val Lys Leu Leu Pro Ala Phe His Thr
305   310   315   320

Pro Ser Gly Ile Pro Trp Ala Leu Leu Asn Met Lys Ser Gly Ile Gly
                 325   330   335

Arg Asn Trp Pro Trp Ala Ser Gly Gly Ser Ser Ile Leu Ala Glu Phe
             340   345   350

Gly Thr Leu His Leu Glu Phe Met His Leu Ser His Leu Ser Gly Asp
             355   360   365

Pro Val Phe Ala Glu Lys Val Met Lys Ile Arg Thr Val Leu Asn Lys
             370   375   380

Leu Asp Lys Pro Glu Gly Leu Tyr Pro Asn Tyr Leu Asn Pro Ser Ser
385   390   395   400

Gly Gln Trp Gly Gln His His Val Ser Val Gly Gly Leu Gly Asp Ser
                 405   410   415

Phe Tyr Glu Tyr Leu Leu Lys Ala Trp Leu Met Ser Asp Lys Thr Asp
             420   425   430

Leu Glu Ala Lys Lys Met Tyr Phe Asp Ala Val Gln Ala Ile Glu Thr
             435   440   445

His Leu Ile Arg Lys Ser Ser Gly Gly Leu Thr Tyr Ile Ala Glu Trp
450   455   460

Lys Gly Gly Leu Leu Glu His Lys Met Gly His Leu Thr Cys Phe Ala
465   470   475   480

Gly Gly Met Phe Ala Leu Gly Ala Asp Gly Ala Pro Glu Ala Arg Ala
                 485   490   495

Gln His Tyr Leu Glu Leu Gly Ala Glu Ile Ala Arg Thr Cys His Glu
             500   505   510

Ser Tyr Asn Arg Thr Tyr Val Lys Leu Gly Pro Glu Ala Phe Arg Phe
             515   520   525

Asp Gly Gly Val Glu Ala Ile Ala Thr Arg Gln Asn Glu Lys Tyr Tyr
             530   535   540

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Ile Leu Arg Pro Glu Val Ile Glu Thr Tyr Met Tyr Met Trp Arg Leu
545             550             555             560

Thr His Asp Pro Lys Tyr Arg Thr Trp Ala Trp Glu Ala Val Glu Ala
                565             570             575

Leu Glu Ser His Cys Arg Val Asn Gly Gly Tyr Ser Gly Leu Arg Asp
            580             585             590

Val Tyr Ile Ala Arg Glu Ser Tyr Asp Asp Val Gln Gln Ser Phe Phe
        595             600             605

Leu Ala Glu Thr Leu Lys Tyr Leu Tyr Leu Ile Phe Ser Asp Asp Asp
    610             615             620

Leu Leu Pro Leu Glu His Trp Ile Phe Asn Thr Glu Ala His Pro Phe
625             630             635             640

Pro Ile Leu Arg Glu Gln Lys Lys Glu Ile Asp Gly Lys Glu Lys
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<210> 3
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<212> DNA
<213> Kluyveromyces lactis

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ccagaagaat tcaattytgy cartgg                              26


<210> 4
<211> 25
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<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Class 2
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<400> 5
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Gln Thr Phe Glu Glu Tyr Tyr
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<210> 6
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<212> PRT
<213> Unknown Organism

<220>
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Glu Phe Val Thr Gly Gly Trp Val Met Pro Asp Glu Ala Asn Ser Trp
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Arg Asn Val Leu Leu Gln Leu Thr Glu Gly Gln Thr Trp Leu Lys Gln
                20   25   30

Phe Met Asn Val Thr Pro Thr Ala Ser Trp Ala Ile Asp Pro Phe Gly
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His Ser Pro Thr Met Pro Tyr Ile Leu
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<210> 7
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<212> PRT
<213> Unknown Organism

<220>
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<400> 7
His Met Met Pro Phe Tyr Ser Tyr Asp Ile Pro His Thr Cys Gly Pro
 1   5   10   15

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Asp Pro Arg Ile Cys Cys Gln Phe Asp Phe Arg Arg Met Pro Gly Gly
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Arg
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<210> 8
<211> 28
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Class 2
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<400> 8
Leu Leu Leu Asp Gln Tyr Arg Lys Lys Ser Glu Leu Phe Arg Thr Asn
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Val Leu Leu Ile Pro Leu Gly Asp Asp Phe Arg Tyr
            20                  25
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<210> 9
<211> 12
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Class 2
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<400> 9
Gln Phe Gly Thr Leu Ser Asp Tyr Phe Asp Ala Leu
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<210> 10
<211> 14
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Class 2
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<400> 10
Leu Ser Gly Asp Phe Phe Thr Tyr Ala Asp Arg Ser Asp His
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<210> 11
<211> 20
<212> PRT
<213> Unknown Organism

<220>
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Tyr Trp Ser Gly Tyr Tyr Thr Ser Arg Pro Phe Tyr Arg Arg Met Asp
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Arg Val Leu Glu
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<210> 12
<211> 27
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Class 2
     mannosidase conserved amino acid sequence

<400> 12
Ala Arg Arg Glu Leu Gly Leu Phe Gln His His Asp Ala Ile Thr Gly
 1   5   10   15

Thr Ala Arg Asp His Val Val Val Asp Tyr Gly
          20   25

<210> 13
<211> 11
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Class 2
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<400> 13
Gly Ala Tyr Leu Phe Leu Pro Asp Gly Glu Ala
 1   5   10

<210> 14
<211> 14
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Class 2
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<400> 14
Phe Tyr Thr Asp Leu Asn Gly Phe Gln Met Gln Lys Arg Arg
  1   5   10

<210> 15
<211> 66
<212> PRT
<213> Unknown Organism

<220>
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<400> 15
Lys Leu Pro Leu Gln Ala Asn Tyr Tyr Pro Met Pro Ser Met Ala Tyr
  1   5   10   15

Ile Gln Asp Ala Asn Thr Arg Leu Thr Leu Leu Thr Gly Gln Pro Leu
             20   25   30

Gly Val Ser Ser Leu Ala Ser Gly Gln Leu Glu Val Met Leu Asp Arg
         35   40   45

Arg Leu Met Ser Asp Asp Asn Arg Gly Leu Gly Gln Gly Val Leu Asp
     50   55   60

Asn Lys
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<210> 16
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<212> DNA
<213> Kluyveromyces lactis

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<210> 17
<211> 27
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<213> Kluyveromyces lactis

<400> 17
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<220>
<223> Description of Artificial Sequence: Synthetic
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<210> 19
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<213> Artificial Sequence

<220>
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<400> 19
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<212> DNA
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<210> 21
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<211> 36
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<223> Description of Artificial Sequence: Synthetic
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<213> Artificial Sequence

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<220>
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caa   63

<210> 33
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<212> DNA
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c   61

<210> 35
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gcccaagccg gccttaaggg atctcctgat gactgactca ctgataataa aaatacgg   58

<210> 40
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<210> 44
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<400> 45
ccagaagaat tcaattytgy cartgg   26

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<210> 46
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<220>
<221> modified_base
<222> (17)
<223> a, c, g, t, other or unknown

<220>
<221> modified_base
<222> (20)
<223> a, c, g, t, other or unknown

<400> 46
cagtgaaaat acctggnccn gtcca                                    25


<210> 47
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 47
tgccatcttt taggtccagg cccgttc                                  27


<210> 48
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 48
gatcccacga cgcatcgtat ttcttttc                                 27


<210> 49
<211> 3522
<212> DNA
<213> Arabidopsis thaliana
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<220>
<221> CDS
<222> (1)..(3519)

<400> 49

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atg ccg ttc tcc tcg tat atc ggc aac agc cgc cgt agc tcc acc ggc    48
Met Pro Phe Ser Ser Tyr Ile Gly Asn Ser Arg Arg Ser Ser Thr Gly
 1               5                   10                  15

gga gga acc ggc ggt tgg ggc caa tct ctt ctt cca aca gcg tta tca    96
Gly Gly Thr Gly Gly Trp Gly Gln Ser Leu Leu Pro Thr Ala Leu Ser
                20                  25                  30

aag tca aaa cta gcg atc aat cga aaa cca cga aaa cga act ctc gta    144
Lys Ser Lys Leu Ala Ile Asn Arg Lys Pro Arg Lys Arg Thr Leu Val
            35                  40                  45

gtc aat ttc atc ttc gcc aac ttc ttc gtc atc gca ctc acc gtc tca    192
Val Asn Phe Ile Phe Ala Asn Phe Phe Val Ile Ala Leu Thr Val Ser
        50                  55                  60

ctc ctc ttc ttc ctc ctc act ctc ttc cac ttc ggc gta cca gga ccg    240
Leu Leu Phe Phe Leu Leu Thr Leu Phe His Phe Gly Val Pro Gly Pro
65                  70                  75                  80

atc tcc tca cga ttc ctt acc tcc aga tcc aat cgg atc gtc aag cca    288
Ile Ser Ser Arg Phe Leu Thr Ser Arg Ser Asn Arg Ile Val Lys Pro
                85                  90                  95

cgg aag aat att aat cgc cga ccc tta aac gat tcc aat tca ggc gcc    336
Arg Lys Asn Ile Asn Arg Arg Pro Leu Asn Asp Ser Asn Ser Gly Ala
                100                 105                 110

gtc gtt gat atc aca act aaa gat cta tac gat agg att gag ttt ctt    384
Val Val Asp Ile Thr Thr Lys Asp Leu Tyr Asp Arg Ile Glu Phe Leu
            115                 120                 125

gat aca gat ggt ggt cca tgg aaa caa ggt tgg aga gtt acg tat aaa    432
Asp Thr Asp Gly Gly Pro Trp Lys Gln Gly Trp Arg Val Thr Tyr Lys
            130                 135                 140

gac gat gag tgg gag aaa gag aag ctc aaa atc ttc gtt gtt cct cat    480
Asp Asp Glu Trp Glu Lys Glu Lys Leu Lys Ile Phe Val Val Pro His
145                 150                 155                 160

tct cat aac gat cct ggt tgg aaa ttg act gta gag gag tat tat cag    528
Ser His Asn Asp Pro Gly Trp Lys Leu Thr Val Glu Glu Tyr Tyr Gln
                165                 170                 175

aga caa tcc aga cat att ctt gac acc att gtt gag act tta tct aag    576
Arg Gln Ser Arg His Ile Leu Asp Thr Ile Val Glu Thr Leu Ser Lys
            180                 185                 190
```

```
gat tca aga aga aag ttt ata tgg gag gag atg tca tat ctg gag aga    624
Asp Ser Arg Arg Lys Phe Ile Trp Glu Glu Met Ser Tyr Leu Glu Arg
        195             200             205

tgg tgg aga gac gct tca cct aat aaa caa gaa gct ttg act aaa ttg    672
Trp Trp Arg Asp Ala Ser Pro Asn Lys Gln Glu Ala Leu Thr Lys Leu
        210             215             220

gtt aag gat ggg cag cta gag att gtt gga ggt ggc tgg gtt atg aat    720
Val Lys Asp Gly Gln Leu Glu Ile Val Gly Gly Gly Trp Val Met Asn
225             230             235             240

gat gag gct aat tca cat tat ttt gcc ata att gaa cag ata gca gag    768
Asp Glu Ala Asn Ser His Tyr Phe Ala Ile Ile Glu Gln Ile Ala Glu
                245             250             255

ggt aat atg tgg ctg aat gac aca att ggg gtt att cct aag aat tct    816
Gly Asn Met Trp Leu Asn Asp Thr Ile Gly Val Ile Pro Lys Asn Ser
        260             265             270

tgg gct ata gat ccc ttt ggc tat tca tca acc atg gct tat ctt ctc    864
Trp Ala Ile Asp Pro Phe Gly Tyr Ser Ser Thr Met Ala Tyr Leu Leu
        275             280             285

cgg cgt atg ggt ttt gaa aac atg ctt att caa agg act cat tac gag    912
Arg Arg Met Gly Phe Glu Asn Met Leu Ile Gln Arg Thr His Tyr Glu
        290             295             300

ctc aag aaa gac ctt gcc cag cat aag aat ctt gaa tat att tgg cgt    960
Leu Lys Lys Asp Leu Ala Gln His Lys Asn Leu Glu Tyr Ile Trp Arg
305             310             315             320

cag agc tgg gat gct atg gaa acc aca gat atc ttt gtt cat atg atg    1008
Gln Ser Trp Asp Ala Met Glu Thr Thr Asp Ile Phe Val His Met Met
                325             330             335

ccg ttt tat tca tac gat atc cca cac act tgt gga cca gag cct gca    1056
Pro Phe Tyr Ser Tyr Asp Ile Pro His Thr Cys Gly Pro Glu Pro Ala
                340             345             350

att tgc tgt cag ttt gat ttc gct cgg atg cgg gga ttt aag tat gaa    1104
Ile Cys Cys Gln Phe Asp Phe Ala Arg Met Arg Gly Phe Lys Tyr Glu
        355             360             365

ctt tgt cca tgg gga aag cac cca gtg gag acc aca cta gaa aat gtg    1152
Leu Cys Pro Trp Gly Lys His Pro Val Glu Thr Thr Leu Glu Asn Val
        370             375             380

cag gag agg gca tta aag ctt ctg gat caa tac agg aaa aaa tcc act    1200
Gln Glu Arg Ala Leu Lys Leu Leu Asp Gln Tyr Arg Lys Lys Ser Thr
385             390             395             400
```

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cta tat cga act aat aca ctt ctt ata cct ctt gga gat gat ttt agg    1248
Leu Tyr Arg Thr Asn Thr Leu Leu Ile Pro Leu Gly Asp Asp Phe Arg
            405             410                 415

tac att agt atc gat gaa gcc gag gct cag ttc cgt aac tac cag atg    1296
Tyr Ile Ser Ile Asp Glu Ala Glu Ala Gln Phe Arg Asn Tyr Gln Met
            420             425                 430

ttg ttt gat cac atc aac tct aat cct agt cta aac gca gaa gca aag    1344
Leu Phe Asp His Ile Asn Ser Asn Pro Ser Leu Asn Ala Glu Ala Lys
            435             440                 445

ttt ggt act ttg gag gat tat ttc aga aca gtc cga gaa gaa gca gac    1392
Phe Gly Thr Leu Glu Asp Tyr Phe Arg Thr Val Arg Glu Glu Ala Asp
    450             455                 460

aga gtg aat tat tct cgt cct ggt gag gtt ggc tct ggt cag gtt gtt    1440
Arg Val Asn Tyr Ser Arg Pro Gly Glu Val Gly Ser Gly Gln Val Val
465             470                 475                 480

ggt ttc cct tct ctg tca ggt gac ttc ttt aca tat gca gat agg caa    1488
Gly Phe Pro Ser Leu Ser Gly Asp Phe Phe Thr Tyr Ala Asp Arg Gln
            485             490                 495

caa gac tat tgg agt ggt tat tat gtt tca aga cct ttc ttc aaa gct    1536
Gln Asp Tyr Trp Ser Gly Tyr Tyr Val Ser Arg Pro Phe Phe Lys Ala
            500             505                 510

gtt gat cgt gtg ctc gag cat acc ctt cgt gga gct gag atc atg atg    1584
Val Asp Arg Val Leu Glu His Thr Leu Arg Gly Ala Glu Ile Met Met
            515             520                 525

tca ttt ctg cta ggt tat tgc cat cga att caa tgt gag aaa ttt cca    1632
Ser Phe Leu Leu Gly Tyr Cys His Arg Ile Gln Cys Glu Lys Phe Pro
    530             535                 540

aca agt ttt acg tat aag ttg act gct gca aga aga aat ctg gct ctt    1680
Thr Ser Phe Thr Tyr Lys Leu Thr Ala Ala Arg Arg Asn Leu Ala Leu
545             550                 555                 560

ttc cag cac cat gat ggg gta act gga act gct aag gat tat gtg gta    1728
Phe Gln His His Asp Gly Val Thr Gly Thr Ala Lys Asp Tyr Val Val
            565             570                 575

caa gat tac ggc acc cgg atg cat act tca ttg caa gac ctt cag atc    1776
Gln Asp Tyr Gly Thr Arg Met His Thr Ser Leu Gln Asp Leu Gln Ile
            580             585                 590

ttt atg tct aaa gca atc gaa gtt ctt ctt ggg atc cgc cac gag aaa    1824
Phe Met Ser Lys Ala Ile Glu Val Leu Leu Gly Ile Arg His Glu Lys
            595             600                 605
```

```
gaa aaa tct gat caa tcc cca tca ttt ttc gag gca gag caa atg aga    1872
Glu Lys Ser Asp Gln Ser Pro Ser Phe Phe Glu Ala Glu Gln Met Arg
    610             615             620

tca aag tat gat gct cgg cca gtt cac aag cca att gct gcc cgg gaa    1920
Ser Lys Tyr Asp Ala Arg Pro Val His Lys Pro Ile Ala Ala Arg Glu
625             630             635             640

gga aat tcg cac aca gtt ata ctc ttc aat cca tca gaa cag acg aga    1968
Gly Asn Ser His Thr Val Ile Leu Phe Asn Pro Ser Glu Gln Thr Arg
            645             650             655

gag gag gtg gtg acg gtt gtt gtt aac cgc gct gaa atc tcg gtt ttg    2016
Glu Glu Val Val Thr Val Val Val Asn Arg Ala Glu Ile Ser Val Leu
            660             665             670

gac tca aac tgg act tgt gtc cct agc caa att tct cct gaa gtg cag    2064
Asp Ser Asn Trp Thr Cys Val Pro Ser Gln Ile Ser Pro Glu Val Gln
            675             680             685

cat gac gat acc aaa cta ttc acc ggc aga cat cgc ctt tac tgg aaa    2112
His Asp Asp Thr Lys Leu Phe Thr Gly Arg His Arg Leu Tyr Trp Lys
    690             695             700

gct tcc atc cca gct ctt ggt ctg aga aca tat ttc att gct aat ggg    2160
Ala Ser Ile Pro Ala Leu Gly Leu Arg Thr Tyr Phe Ile Ala Asn Gly
705             710             715             720

aat gtc gag tgt gag aaa gct act ccg tct aaa ctc aaa tac gct tct    2208
Asn Val Glu Cys Glu Lys Ala Thr Pro Ser Lys Leu Lys Tyr Ala Ser
            725             730             735

gag ttt gac cca ttt cct tgt cct cct cca tat tcc tgc tcc aaa ctg    2256
Glu Phe Asp Pro Phe Pro Cys Pro Pro Pro Tyr Ser Cys Ser Lys Leu
            740             745             750

gac aac gac gtt act gag atc cga aat gaa cat cag act ctt gtg ttt    2304
Asp Asn Asp Val Thr Glu Ile Arg Asn Glu His Gln Thr Leu Val Phe
            755             760             765

gat gtg aag aac gga tca ctg cgg aag ata gtc cat aga aac gga tca    2352
Asp Val Lys Asn Gly Ser Leu Arg Lys Ile Val His Arg Asn Gly Ser
    770             775             780

gag act gtt gtg gga gaa gag ata ggt atg tac tct agt cca gag agt    2400
Glu Thr Val Val Gly Glu Glu Ile Gly Met Tyr Ser Ser Pro Glu Ser
785             790             795             800

gga gct tac ctg ttc aaa cca gat ggt gaa gct cag cca att gtt caa    2448
Gly Ala Tyr Leu Phe Lys Pro Asp Gly Glu Ala Gln Pro Ile Val Gln
            805             810             815
```

```
cct gat gga cat gta gtc acc tct gag ggt ctg ctg gtt caa gaa gtc    2496
Pro Asp Gly His Val Val Thr Ser Glu Gly Leu Leu Val Gln Glu Val
        820                     825                 830

ttc tct tac cct aaa acc aaa tgg gag aaa tca ccc ctc tct cag aaa    2544
Phe Ser Tyr Pro Lys Thr Lys Trp Glu Lys Ser Pro Leu Ser Gln Lys
        835                     840                 845

act cgt ctt tac act gga ggt aat acg ctt cag gat caa gtg gtc gag    2592
Thr Arg Leu Tyr Thr Gly Gly Asn Thr Leu Gln Asp Gln Val Val Glu
        850                     855                 860

ata gaa tat cat gtt gag ctt ctt ggt aat gat ttt gat gac cgg gaa    2640
Ile Glu Tyr His Val Glu Leu Leu Gly Asn Asp Phe Asp Asp Arg Glu
865                     870                 875                 880

ttg att gtc cgg tac aag act gat gtt gac aac aag aag gtc ttc tat    2688
Leu Ile Val Arg Tyr Lys Thr Asp Val Asp Asn Lys Lys Val Phe Tyr
                885                     890                 895

tca gat ctc aat ggt ttc caa atg agc agg aga gaa act tat gat aag    2736
Ser Asp Leu Asn Gly Phe Gln Met Ser Arg Arg Glu Thr Tyr Asp Lys
                900                     905                 910

atc cct ctt caa gga aac tac tac cca atg cca tct ctc gca ttt atc    2784
Ile Pro Leu Gln Gly Asn Tyr Tyr Pro Met Pro Ser Leu Ala Phe Ile
            915                     920                 925

caa gga tcc aat ggt cag aga ttc tcc gtg cac tct cgt caa tct ctc    2832
Gln Gly Ser Asn Gly Gln Arg Phe Ser Val His Ser Arg Gln Ser Leu
        930                     935                 940

ggt gtt gca agc ctc aaa gag ggt tgg ttg gag att atg ctg gac aga    2880
Gly Val Ala Ser Leu Lys Glu Gly Trp Leu Glu Ile Met Leu Asp Arg
945                     950                 955                 960

cgg ttg gtt cgt gat gac gga cgg ggt cta ggg caa ggt gtg atg gat    2928
Arg Leu Val Arg Asp Asp Gly Arg Gly Leu Gly Gln Gly Val Met Asp
                965                     970                 975

aac cgc gca atg acc gtg gta ttt cac ctt ctt gcg gaa tct aac att    2976
Asn Arg Ala Met Thr Val Val Phe His Leu Leu Ala Glu Ser Asn Ile
                980                     985                 990

tct caa gca gac cct gct tcc aac act aac ccg agg aac cct tcg ctt    3024
Ser Gln Ala Asp Pro Ala Ser Asn Thr Asn Pro Arg Asn Pro Ser Leu
        995                     1000                1005

ctc tct cac ctc ata ggt gct cac tta aac tac ccc ata aac aca ttc    3072
Leu Ser His Leu Ile Gly Ala His Leu Asn Tyr Pro Ile Asn Thr Phe
        1010                    1015                1020
```

```
att gcc aag aaa ccg caa gac ata tct gtg cgt gtt cca caa tac ggt      3120
Ile Ala Lys Lys Pro Gln Asp Ile Ser Val Arg Val Pro Gln Tyr Gly
1025                1030                1035                1040

tcc ttt gct cct tta gcc aaa ccg tta cca tgt gac ctc cac att gta      3168
Ser Phe Ala Pro Leu Ala Lys Pro Leu Pro Cys Asp Leu His Ile Val
                1045                1050                1055

aat ttc aag gtt cct cgt cca tcc aaa tac tct cag caa ttg gaa gaa      3216
Asn Phe Lys Val Pro Arg Pro Ser Lys Tyr Ser Gln Gln Leu Glu Glu
                1060                1065                1070

gac aag cca agg ttc gct ctt atc ctc aat aga cga gct tgg gat tca      3264
Asp Lys Pro Arg Phe Ala Leu Ile Leu Asn Arg Arg Ala Trp Asp Ser
            1075                1080                1085

gct tat tgc cat aaa gga aga caa gta aac tgc aca agc atg gct aat      3312
Ala Tyr Cys His Lys Gly Arg Gln Val Asn Cys Thr Ser Met Ala Asn
        1090                1095                1100

gaa cca gta aac ttt tcc gac atg ttc aaa gat ctt gca gct tca aag      3360
Glu Pro Val Asn Phe Ser Asp Met Phe Lys Asp Leu Ala Ala Ser Lys
1105                1110                1115                1120

gta aaa cca act tca ctg aat ctc ttg caa gaa gat atg gag att ctt      3408
Val Lys Pro Thr Ser Leu Asn Leu Leu Gln Glu Asp Met Glu Ile Leu
                1125                1130                1135

ggg tac gat gac caa gag cta cct cga gat agt tca cag cca cgg gaa      3456
Gly Tyr Asp Asp Gln Glu Leu Pro Arg Asp Ser Ser Gln Pro Arg Glu
                1140                1145                1150

gga cgt gtc tcg atc tct ccc atg gaa ata cga gct tat aag ctt gaa      3504
Gly Arg Val Ser Ile Ser Pro Met Glu Ile Arg Ala Tyr Lys Leu Glu
            1155                1160                1165

ctg cga cct cac aag tga                                              3522
Leu Arg Pro His Lys
    1170
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<210> 50
<211> 3432
<212> DNA
<213> Caenorhabditis elegans

<220>
<221> CDS
<222> (1)..(3429)
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<400> 50

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atg gga aaa cgc aat ttc tat att atc cta tgt ttg gga gtc ttt ctc     48
Met Gly Lys Arg Asn Phe Tyr Ile Ile Leu Cys Leu Gly Val Phe Leu
 1               5                  10                  15


acc gta tca ctc tat ttg tac aat gga att gaa acc gga gct gaa gcg     96
Thr Val Ser Leu Tyr Leu Tyr Asn Gly Ile Glu Thr Gly Ala Glu Ala
            20                  25                  30


ctc acc aaa cga caa gca aat gat tta cgg cgg aaa atc gga aat ttg    144
Leu Thr Lys Arg Gln Ala Asn Asp Leu Arg Arg Lys Ile Gly Asn Leu
            35                  40                  45


gag cat gta gca gaa gaa aat gga aga acg ata gac cgc ttg gaa caa    192
Glu His Val Ala Glu Glu Asn Gly Arg Thr Ile Asp Arg Leu Glu Gln
        50                  55                  60


gaa gtt caa cga gca aaa gct gaa aaa tcg gta gat ttt gat gaa gaa    240
Glu Val Gln Arg Ala Lys Ala Glu Lys Ser Val Asp Phe Asp Glu Glu
 65                  70                  75                  80


aaa gaa aaa acg gaa gaa aaa gaa gta gaa aaa gag gaa aaa gaa gtt    288
Lys Glu Lys Thr Glu Glu Lys Glu Val Glu Lys Glu Glu Lys Glu Val
                85                  90                  95


gca cca gtt cca gtt cga gga aat cgt ggt gaa atg gct cat att cat    336
Ala Pro Val Pro Val Arg Gly Asn Arg Gly Glu Met Ala His Ile His
            100                 105                 110


caa gta aag caa cat atc aag cca act cca tcg atg aaa gat gtt tgt    384
Gln Val Lys Gln His Ile Lys Pro Thr Pro Ser Met Lys Asp Val Cys
            115                 120                 125


gga att aga gaa aac gtc agc att gct cat tca gac ctg cag atg ctc    432
Gly Ile Arg Glu Asn Val Ser Ile Ala His Ser Asp Leu Gln Met Leu
        130                 135                 140


gat ctc tat gac acc tgg aag ttc gaa aat cca gac gga ggt gta tgg    480
Asp Leu Tyr Asp Thr Trp Lys Phe Glu Asn Pro Asp Gly Gly Val Trp
145                 150                 155                 160


aaa caa gga tgg aaa att gaa tac gat gca gag aaa gtc aaa tct ctt    528
Lys Gln Gly Trp Lys Ile Glu Tyr Asp Ala Glu Lys Val Lys Ser Leu
                165                 170                 175


cca cgt ttg gaa gtt att gtg ata cct cat tct cat tgt gat ccc gga    576
Pro Arg Leu Glu Val Ile Val Ile Pro His Ser His Cys Asp Pro Gly
            180                 185                 190 .


tgg att atg act ttc gaa gag tat tac aac aga caa act cgc aat att    624
Trp Ile Met Thr Phe Glu Glu Tyr Tyr Asn Arg Gln Thr Arg Asn Ile
            195                 200                 205
```

```
ctt gat gga atg gct aaa cat ttg gca gaa aaa gac gaa atg cgg ttt    672
Leu Asp Gly Met Ala Lys His Leu Ala Glu Lys Asp Glu Met Arg Phe
    210             215             220

ata tat gca gaa ata tca ttt ttc gaa act tgg tgg aga gac cag gca    720
Ile Tyr Ala Glu Ile Ser Phe Phe Glu Thr Trp Trp Arg Asp Gln Ala
225             230             235             240

gat gaa att aaa aag aaa gtt aaa gga tat ttg gaa gca gga aag ttt    768
Asp Glu Ile Lys Lys Lys Val Lys Gly Tyr Leu Glu Ala Gly Lys Phe
            245             250             255

gaa att gtt act ggc gga tgg gtt atg aca gat gaa gct aat gca cat    816
Glu Ile Val Thr Gly Gly Trp Val Met Thr Asp Glu Ala Asn Ala His
            260             265             270

tat cac tca atg atc act gaa ttg ttc gaa gga cat gaa tgg att caa    864
Tyr His Ser Met Ile Thr Glu Leu Phe Glu Gly His Glu Trp Ile Gln
            275             280             285

aat cat ttg gga aaa agc gcc att cca caa tct cat tgg tca att gat    912
Asn His Leu Gly Lys Ser Ala Ile Pro Gln Ser His Trp Ser Ile Asp
    290             295             300

cca ttc ggt tta tca cca tca atg cca cat ctt cta act tct gct aat    960
Pro Phe Gly Leu Ser Pro Ser Met Pro His Leu Leu Thr Ser Ala Asn
305             310             315             320

ata acc aat gct gta att caa aga gtt cat tat tcg gtg aaa cgt gag    1008
Ile Thr Asn Ala Val Ile Gln Arg Val His Tyr Ser Val Lys Arg Glu
            325             330             335

ctt gct ctg aaa aag aat ctt gaa ttc tac tgg aga caa tta ttt gga    1056
Leu Ala Leu Lys Lys Asn Leu Glu Phe Tyr Trp Arg Gln Leu Phe Gly
            340             345             350

tca act gga cat cct gat ctt cgt tca cat att atg cct ttc tac tct    1104
Ser Thr Gly His Pro Asp Leu Arg Ser His Ile Met Pro Phe Tyr Ser
            355             360             365

tac gat ata cct cat acg tgt ggc cca gaa ccg tct gtt tgc tgt caa    1152
Tyr Asp Ile Pro His Thr Cys Gly Pro Glu Pro Ser Val Cys Cys Gln
    370             375             380

ttc gat ttc cgt aga atg cca gaa ggt gga aaa tca tgt gat tgg gga    1200
Phe Asp Phe Arg Arg Met Pro Glu Gly Gly Lys Ser Cys Asp Trp Gly
385             390             395             400

atc cct cca cag aaa att aac gat gac aat gtg gct cac aga gct gaa    1248
Ile Pro Pro Gln Lys Ile Asn Asp Asp Asn Val Ala His Arg Ala Glu
            405             410             415
```

```
atg att tat gat caa tat aga aag aaa agt caa ctt ttc aag aat aat    1296
Met Ile Tyr Asp Gln Tyr Arg Lys Lys Ser Gln Leu Phe Lys Asn Asn
        420             425             430

gtg att ttc caa cca ctt gga gat gat ttc agg tac gac att gat ttt    1344
Val Ile Phe Gln Pro Leu Gly Asp Asp Phe Arg Tyr Asp Ile Asp Phe
        435             440             445

gaa tgg aat tca caa tat gaa aac tat aag aaa ttg ttc gaa tac atg    1392
Glu Trp Asn Ser Gln Tyr Glu Asn Tyr Lys Lys Leu Phe Glu Tyr Met
        450             455             460

aat tcc aaa tca gaa tgg aat gtt cat gct caa ttc gga act ctt tct    1440
Asn Ser Lys Ser Glu Trp Asn Val His Ala Gln Phe Gly Thr Leu Ser
465             470             475             480

gat tat ttc aag aag ctt gat act gca att tct gcg tct ggc gag caa    1488
Asp Tyr Phe Lys Lys Leu Asp Thr Ala Ile Ser Ala Ser Gly Glu Gln
            485             490             495

ctt cca act ttt tct gga gat ttc ttc act tat gcg gac aga gat gat    1536
Leu Pro Thr Phe Ser Gly Asp Phe Phe Thr Tyr Ala Asp Arg Asp Asp
            500             505             510

cat tat tgg agt gga tac ttc act tcc cgt cca ttc tat aaa cag ctt    1584
His Tyr Trp Ser Gly Tyr Phe Thr Ser Arg Pro Phe Tyr Lys Gln Leu
            515             520             525

gat cgg gtt ctc caa cat tat tta aga tca gct gaa atc gcc ttt acc    1632
Asp Arg Val Leu Gln His Tyr Leu Arg Ser Ala Glu Ile Ala Phe Thr
        530             535             540

ctt gca aat att gaa gaa gaa gga atg gtt gaa gcg aaa att ttt gag    1680
Leu Ala Asn Ile Glu Glu Glu Gly Met Val Glu Ala Lys Ile Phe Glu
545             550             555             560

aag ctt gtg act gct cga cga gct ctt tca ctt ttc caa cat cac gat    1728
Lys Leu Val Thr Ala Arg Arg Ala Leu Ser Leu Phe Gln His His Asp
            565             570             575

ggt gta act ggt acg gca aaa gat cac gtc gtc ttg gat tat ggt cag    1776
Gly Val Thr Gly Thr Ala Lys Asp His Val Val Leu Asp Tyr Gly Gln
            580             585             590

aaa atg att gat gct ttg aac gca tgt gag gat att ctt tcg gaa gct    1824
Lys Met Ile Asp Ala Leu Asn Ala Cys Glu Asp Ile Leu Ser Glu Ala
        595             600             605

ctt gtt gta ttg ctg gga att gat tca acg aat aag atg cag atg gat    1872
Leu Val Val Leu Leu Gly Ile Asp Ser Thr Asn Lys Met Gln Met Asp
        610             615             620
```

```
gag cat aga gtt aat gaa aac ctt cta ccc gaa aaa cgt gtc tat aaa    1920
Glu His Arg Val Asn Glu Asn Leu Leu Pro Glu Lys Arg Val Tyr Lys
625                     630             635                 640

att ggg caa aac gtc gta ttg ttc aat act tta tct aga aat cgc aac    1968
Ile Gly Gln Asn Val Val Leu Phe Asn Thr Leu Ser Arg Asn Arg Asn
                    645             650                 655

gag cca att tgt att caa gtt gat tct ctt gac gct ggt gtc gaa gct    2016
Glu Pro Ile Cys Ile Gln Val Asp Ser Leu Asp Ala Gly Val Glu Ala
                660             665                 670

gat cct cca att aaa aaa caa caa gtt tcg ccg gtt att gca tat gat    2064
Asp Pro Pro Ile Lys Lys Gln Gln Val Ser Pro Val Ile Ala Tyr Asp
                675             680                 685

gaa gag aag aaa acg ctt gtt gtc aaa aac gga ata ttc gaa ctt tgc    2112
Glu Glu Lys Lys Thr Leu Val Val Lys Asn Gly Ile Phe Glu Leu Cys
        690             695             700

ttc atg tta tca ctt gga cca atg gag tct gtc agt ttc aga ctt gtg    2160
Phe Met Leu Ser Leu Gly Pro Met Glu Ser Val Ser Phe Arg Leu Val
705                     710             715                 720

aaa aat aca aca aca tcc aaa gtt gaa ata atc acc aat aat gcg gca    2208
Lys Asn Thr Thr Thr Ser Lys Val Glu Ile Ile Thr Asn Asn Ala Ala
                725             730                 735

gaa ttc aaa gaa aca agt ttt aaa tct tca tcc act tct gga gac ttt    2256
Glu Phe Lys Glu Thr Ser Phe Lys Ser Ser Ser Thr Ser Gly Asp Phe
            740             745                 750

act gtg aaa aac gac aaa gtt gaa gct gaa ttt gat gga gaa aat gga    2304
Thr Val Lys Asn Asp Lys Val Glu Ala Glu Phe Asp Gly Glu Asn Gly
            755             760             765

atg att aaa aga gct acc agt ctt gtt gat gat aaa cca att gat ttg    2352
Met Ile Lys Arg Ala Thr Ser Leu Val Asp Asp Lys Pro Ile Asp Leu
    770             775                 780

aat tct cac ttt att cat tat gga gca cgg aag tca aag aga aag ttc    2400
Asn Ser His Phe Ile His Tyr Gly Ala Arg Lys Ser Lys Arg Lys Phe
785             790                 795                 800

gca aat gga aat gaa gac aac ccg gct ggc gca tac ctg ttc ctt ccc    2448
Ala Asn Gly Asn Glu Asp Asn Pro Ala Gly Ala Tyr Leu Phe Leu Pro
                805                 810                 815

gat gga gaa gct aga gaa ctc aaa aaa caa tca agt gat tgg ata ttg    2496
Asp Gly Glu Ala Arg Glu Leu Lys Lys Gln Ser Ser Asp Trp Ile Leu
            820             825                 830
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gta aaa gga gaa gtt gtt caa aaa gtg ttt gca act cca aac aat gat     2544
Val Lys Gly Glu Val Val Gln Lys Val Phe Ala Thr Pro Asn Asn Asp
        835             840             845

ctg aaa ata ttg caa acg tac aca ctt tat caa ggg ctt cca tgg att     2592
Leu Lys Ile Leu Gln Thr Tyr Thr Leu Tyr Gln Gly Leu Pro Trp Ile
    850             855             860

gat ttg gat aat gaa gtt gat gta cgt tcc aag gag aat ttc gag ttg     2640
Asp Leu Asp Asn Glu Val Asp Val Arg Ser Lys Glu Asn Phe Glu Leu
865             870             875             880

gca ctg aga ttc agt tct tca gta aat agt ggt gat gag ttt ttc act     2688
Ala Leu Arg Phe Ser Ser Ser Val Asn Ser Gly Asp Glu Phe Phe Thr
                885             890             895

gat ctc aat gga atg caa atg ata aaa agg aga cga caa act aaa tta     2736
Asp Leu Asn Gly Met Gln Met Ile Lys Arg Arg Arg Gln Thr Lys Leu
            900             905             910

cca aca cag gcc aat ttc tat ccc atg tct gct ggt gtt tac att gaa     2784
Pro Thr Gln Ala Asn Phe Tyr Pro Met Ser Ala Gly Val Tyr Ile Glu
            915             920             925

gac gat act acc aga atg tca att cat tcg gca cag gct ctc gga gtt     2832
Asp Asp Thr Thr Arg Met Ser Ile His Ser Ala Gln Ala Leu Gly Val
    930             935             940

agc agt ctc tcg tcg gga caa att gaa ata atg ctt gat cga cga ctt     2880
Ser Ser Leu Ser Ser Gly Gln Ile Glu Ile Met Leu Asp Arg Arg Leu
945             950             955             960

agt tca gat gac aac aga ggt ctt cag caa gga gtt aga gac aac aaa     2928
Ser Ser Asp Asp Asn Arg Gly Leu Gln Gln Gly Val Arg Asp Asn Lys
                965             970             975

cga aca gtt gca cat ttc cgt att gtt att gag ccg atg tct tca tcg     2976
Arg Thr Val Ala His Phe Arg Ile Val Ile Glu Pro Met Ser Ser Ser
            980             985             990

agt ggt aat aag aag gaa gaa cga gtt gga ttc cat tca cat gtt ggt     3024
Ser Gly Asn Lys Lys Glu Glu Arg Val Gly Phe His Ser His Val Gly
        995             1000            1005

cat ctc gct acg tgg tct ctt cat tat cct ctt gtc aaa atg att gga     3072
His Leu Ala Thr Trp Ser Leu His Tyr Pro Leu Val Lys Met Ile Gly
    1010            1015            1020

gat gca aca cca aaa tct att tct tcg aaa aat gtg gaa caa gag ctg     3120
Asp Ala Thr Pro Lys Ser Ile Ser Ser Lys Asn Val Glu Gln Glu Leu
1025            1030            1035            1040
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aac tgt gac ctg cat cta gtg aca ttt aga aca ctg gca tcg ccg aca       3168
Asn Cys Asp Leu His Leu Val Thr Phe Arg Thr Leu Ala Ser Pro Thr
            1045                1050                1055

act tac gaa gcc aac gaa aga tct acg gca gct gag aag aaa gca gcg       3216
Thr Tyr Glu Ala Asn Glu Arg Ser Thr Ala Ala Glu Lys Lys Ala Ala
            1060                1065                1070

atg gtg atg cat aga gtt gtt cca gac tgt aga tcc agg ctt acc ctc       3264
Met Val Met His Arg Val Val Pro Asp Cys Arg Ser Arg Leu Thr Leu
            1075                1080                1085

cca gac acg tca tgc tta gct act gga tta gaa att gag cca ctc aaa       3312
Pro Asp Thr Ser Cys Leu Ala Thr Gly Leu Glu Ile Glu Pro Leu Lys
            1090                1095                1100

ttg atc tcg aca ctg aag tct gcg aaa aaa acg tca cta acc aat ctt       3360
Leu Ile Ser Thr Leu Lys Ser Ala Lys Lys Thr Ser Leu Thr Asn Leu
1105                1110                1115                1120

tat gaa gga aac aag gct gaa caa ttc cga ctc caa cca aac gat att       3408
Tyr Glu Gly Asn Lys Ala Glu Gln Phe Arg Leu Gln Pro Asn Asp Ile
            1125                1130                1135

tcc agt att ctt gta tca ttt taa                                       3432
Ser Ser Ile Leu Val Ser Phe
            1140
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Met Lys Leu Lys Arg Gln Phe Leu Phe Phe Gly Gly Ile Leu Phe Phe
  1               5                10                  15

ggg agt atc tgg ttt atg ata ggt caa ctt gac act cct aat tcg cca        96
Gly Ser Ile Trp Phe Met Ile Gly Gln Leu Asp Thr Pro Asn Ser Pro
            20                25                  30

cag aaa gtc aaa ttc tcg gaa ggc agt gaa aat gac caa gtt cga acc       144
Gln Lys Val Lys Phe Ser Glu Gly Ser Glu Asn Asp Gln Val Arg Thr
            35                40                  45
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ctt caa gac aaa ctt agt ctg gtg gaa aaa gaa ttg tta gaa aat cgt    192
Leu Gln Asp Lys Leu Ser Leu Val Glu Lys Glu Leu Leu Glu Asn Arg
    50                  55                  60

aaa ata atg cac aag gtg aaa gat agt cta cag gat atg aca ccc atg    240
Lys Ile Met His Lys Val Lys Asp Ser Leu Gln Asp Met Thr Pro Met
65                  70                  75                  80

aaa aat gtt cat gtg cct atg cag cgc gga gaa ata aga aac aac gtc    288
Lys Asn Val His Val Pro Met Gln Arg Gly Glu Ile Arg Asn Asn Val
                85                  90                  95

aat aaa cct gtg cta cca ctt ata atg ccc aag caa ttt gcg aat gac    336
Asn Lys Pro Val Leu Pro Leu Ile Met Pro Lys Gln Phe Ala Asn Asp
            100                 105                 110

tcc cga atg agt gac acg tgt cct gtg ctc tcg tac tcc ggt ggc aag    384
Ser Arg Met Ser Asp Thr Cys Pro Val Leu Ser Tyr Ser Gly Gly Lys
            115                 120                 125

tcc gat gtt aac atg att aac gtg tat gat cat ctt cca ttt gat gat    432
Ser Asp Val Asn Met Ile Asn Val Tyr Asp His Leu Pro Phe Asp Asp
        130                 135                 140

cca gat ggt gga gtt tgg aaa caa ggt tgg gac atc cag aca tcg gat    480
Pro Asp Gly Gly Val Trp Lys Gln Gly Trp Asp Ile Gln Thr Ser Asp
145                 150                 155                 160

cag gaa tgg gct ggg aga aaa ttg aaa gtg ttc att gtc cct cac tca    528
Gln Glu Trp Ala Gly Arg Lys Leu Lys Val Phe Ile Val Pro His Ser
                165                 170                 175

cat aat gat cct ggt tgg tta aag acg gtg gaa aga tac ttc agc gat    576
His Asn Asp Pro Gly Trp Leu Lys Thr Val Glu Arg Tyr Phe Ser Asp
            180                 185                 190

caa aca caa cat att ctc aat aat att gtg gat gct ttg agt caa gac    624
Gln Thr Gln His Ile Leu Asn Asn Ile Val Asp Ala Leu Ser Gln Asp
            195                 200                 205

cct gca agg aag ttt atc tgg gca gag atg tcg tat ctc tca atg tgg    672
Pro Ala Arg Lys Phe Ile Trp Ala Glu Met Ser Tyr Leu Ser Met Trp
    210                 215                 220

tgg gac att gcc aca cct gat cgt aag cag aaa atg cag aca ctc gtg    720
Trp Asp Ile Ala Thr Pro Asp Arg Lys Gln Lys Met Gln Thr Leu Val
225                 230                 235                 240

aag aat gga cag ctt gag ata gtt acg ggt ggt tgg gtc atg aat gat    768
Lys Asn Gly Gln Leu Glu Ile Val Thr Gly Gly Trp Val Met Asn Asp
                245                 250                 255
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gaa gca aac act cat tac ttt gct atg att gat caa ctc att gaa ggt    816
Glu Ala Asn Thr His Tyr Phe Ala Met Ile Asp Gln Leu Ile Glu Gly
            260             265             270

atg gaa tgg ttg agg cga aca ttg aat gtt gtt cca aaa agt ggg tgg    864
Met Glu Trp Leu Arg Arg Thr Leu Asn Val Val Pro Lys Ser Gly Trp
        275             280             285

gcg att gat ccc ttt ggt cac acc ccc acc atg gct tat ata ctg aaa    912
Ala Ile Asp Pro Phe Gly His Thr Pro Thr Met Ala Tyr Ile Leu Lys
        290             295             300

cag atg aag ttc aaa aac atg ctg ata caa aga gtc cat tat gca gtg    960
Gln Met Lys Phe Lys Asn Met Leu Ile Gln Arg Val His Tyr Ala Val
305             310             315             320

aag aag tat ctt gct cag gaa aag tct ctg gaa ttc aga tgg aga caa   1008
Lys Lys Tyr Leu Ala Gln Glu Lys Ser Leu Glu Phe Arg Trp Arg Gln
                325             330             335

atg tgg gat tca gct tca agt aca gac atg atg tgt cat ctc atg cct   1056
Met Trp Asp Ser Ala Ser Ser Thr Asp Met Met Cys His Leu Met Pro
            340             345             350

ttc tat tca tat gat gtt cct cat act tgt ggc cca gac ccc aag att   1104
Phe Tyr Ser Tyr Asp Val Pro His Thr Cys Gly Pro Asp Pro Lys Ile
            355             360             365

tgc tgc cag ttt gat ttt gct cgc tta ccc ggc ggc aag ata acc tgc   1152
Cys Cys Gln Phe Asp Phe Ala Arg Leu Pro Gly Gly Lys Ile Thr Cys
        370             375             380

cca tgg aaa gtt cct cct gtt gcc atc act gac tcc aat gta gaa aca   1200
Pro Trp Lys Val Pro Pro Val Ala Ile Thr Asp Ser Asn Val Glu Thr
385             390             395             400

cga gcc gga ata cta ctt gac caa tat aga aaa aag tca aaa ctc ttc   1248
Arg Ala Gly Ile Leu Leu Asp Gln Tyr Arg Lys Lys Ser Lys Leu Phe
                405             410             415

aaa agt gac acc ctg ctt att ata tta gga gat gat ttt cgt tat tcg   1296
Lys Ser Asp Thr Leu Leu Ile Ile Leu Gly Asp Asp Phe Arg Tyr Ser
            420             425             430

ctg agc aag gaa acc aac gat cag ttt gac aac tac gct cga att atc   1344
Leu Ser Lys Glu Thr Asn Asp Gln Phe Asp Asn Tyr Ala Arg Ile Ile
            435             440             445

tcg tat gtg aat tcg cac cca gag tta aac gca aaa ctt cag ttt gga   1392
Ser Tyr Val Asn Ser His Pro Glu Leu Asn Ala Lys Leu Gln Phe Gly
        450             455             460
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aca tta tcc gaa tat ttt gat gcc atg aaa tct gaa gtg ggg gga gag     1440
Thr Leu Ser Glu Tyr Phe Asp Ala Met Lys Ser Glu Val Gly Gly Glu
465             470             475                     480

gaa aaa ctc cca gct tta agt ggt gat ttc ttc act tat gct gat aga     1488
Glu Lys Leu Pro Ala Leu Ser Gly Asp Phe Phe Thr Tyr Ala Asp Arg
                485             490             495

gaa gat cac tat tgg agt ggt tac tac act tca cgg cct tac cac aaa     1536
Glu Asp His Tyr Trp Ser Gly Tyr Tyr Thr Ser Arg Pro Tyr His Lys
        500             505             510

atg cag gag aga gtc ctg gaa agc cac ctt cga gga gca gaa atg ttg     1584
Met Gln Glu Arg Val Leu Glu Ser His Leu Arg Gly Ala Glu Met Leu
        515             520             525

ttt gcg ctc tca tgg ccc aaa atc cag tgg aca gga ctt ggt gaa aca     1632
Phe Ala Leu Ser Trp Pro Lys Ile Gln Trp Thr Gly Leu Gly Glu Thr
        530             535             540

ttt tca cat gaa ctt tac cca ctg ctg gtc caa gca cgt caa aat ctt     1680
Phe Ser His Glu Leu Tyr Pro Leu Leu Val Gln Ala Arg Gln Asn Leu
545             550             555             560

ggt ttg ttt caa cac cac gat ggt ata aca ggc aca gca aag gat cat     1728
Gly Leu Phe Gln His His Asp Gly Ile Thr Gly Thr Ala Lys Asp His
            565             570             575

gtt gtt gtt gat tac ggg aat aaa ctc atg aag agt gtt atg gat gca     1776
Val Val Val Asp Tyr Gly Asn Lys Leu Met Lys Ser Val Met Asp Ala
            580             585             590

aag aag gta att tca tac agt gcc caa gtt ctg ttg caa gaa atg atc     1824
Lys Lys Val Ile Ser Tyr Ser Ala Gln Val Leu Leu Gln Glu Met Ile
            595             600             605

acg ttt gat cca aat acc atg gta ctt aac tat gat gag gtg tat caa     1872
Thr Phe Asp Pro Asn Thr Met Val Leu Asn Tyr Asp Glu Val Tyr Gln
    610             615             620

gct cag aac caa caa cct gcg cct gtg gtt gtt aag cta cca acg aag     1920
Ala Gln Asn Gln Gln Pro Ala Pro Val Val Val Lys Leu Pro Thr Lys
625             630             635             640

aat gaa gaa gcg cgg aaa gtc gtt ctc tac aac tct ctg gat tac gac     1968
Asn Glu Glu Ala Arg Lys Val Val Leu Tyr Asn Ser Leu Asp Tyr Asp
            645             650             655

aga act ggt gtc gtg cgt cta att gtt acg tca ccc gac gtg gtt gtg     2016
Arg Thr Gly Val Val Arg Leu Ile Val Thr Ser Pro Asp Val Val Val
        660             665             670
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atg tca gaa aac aaa aac gtc gtt cca tcg caa acc agt ccg atc tgg    2064
Met Ser Glu Asn Lys Asn Val Val Pro Ser Gln Thr Ser Pro Ile Trp
        675             680             685

tca gat tcg acg gag atc cgc aca gac cag ttt gaa ctg gtt ttc ctt    2112
Ser Asp Ser Thr Glu Ile Arg Thr Asp Gln Phe Glu Leu Val Phe Leu
        690             695             700

tca act gtt ccc gcg ata gga ctg gcg gtg tac aag ata tgg gaa gac    2160
Ser Thr Val Pro Ala Ile Gly Leu Ala Val Tyr Lys Ile Trp Glu Asp
705             710             715             720

aac gac gta gca gac acc acg cac tca act gtt aag ttt atc aac ccg    2208
Asn Asp Val Ala Asp Thr Thr His Ser Thr Val Lys Phe Ile Asn Pro
                725             730             735

aga gtt ggg ttt tcg aaa cga acc cgc agt aag ttt gta ctc gac gtt    2256
Arg Val Gly Phe Ser Lys Arg Thr Arg Ser Lys Phe Val Leu Asp Val
            740             745             750

gag gat agc ggg gag ttt acc atc atg aat gac caa tta gtt gcg cat    2304
Glu Asp Ser Gly Glu Phe Thr Ile Met Asn Asp Gln Leu Val Ala His
            755             760             765

ttc tct gga caa aac ggg atg ctg cag tca gtc acc act gtg cgt gac    2352
Phe Ser Gly Gln Asn Gly Met Leu Gln Ser Val Thr Thr Val Arg Asp
        770             775             780

aac gtt aaa acg cag ctc gga att gaa ttc gtc gct tat act tct cgt    2400
Asn Val Lys Thr Gln Leu Gly Ile Glu Phe Val Ala Tyr Thr Ser Arg
785             790             795             800

aat aag aaa gac aag agc ggc gct tac ttg ttc ctg cct gct gga cca    2448
Asn Lys Lys Asp Lys Ser Gly Ala Tyr Leu Phe Leu Pro Ala Gly Pro
                805             810             815

gca caa ccg cat gta aca gaa tcc cac cga ccg tta gta agg atc atc    2496
Ala Gln Pro His Val Thr Glu Ser His Arg Pro Leu Val Arg Ile Ile
                820             825             830

agg ggt cca gtg atg tca acg gtg cat gtt cta cta ccg aac gtt ctg    2544
Arg Gly Pro Val Met Ser Thr Val His Val Leu Leu Pro Asn Val Leu
            835             840             845

cat aaa gtt acc cta tac acc ggt act ggt gca ggc acg cag tct tta    2592
His Lys Val Thr Leu Tyr Thr Gly Thr Gly Ala Gly Thr Gln Ser Leu
        850             855             860

ggc gtc cac gtc tct aac gac gtc gac gtt aga act ggc tac gac aac    2640
Gly Val His Val Ser Asn Asp Val Asp Val Arg Thr Gly Tyr Asp Asn
865             870             875             880
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aaa gaa ctc agt atg agg tta aac agc gaa gtt tta tcg gga agc aaa    2688
Lys Glu Leu Ser Met Arg Leu Asn Ser Glu Val Leu Ser Gly Ser Lys
                885                 890                 895

ttc ttt acg gat tta aac ggt ttc caa att caa ccc cga acc acg tat    2736
Phe Phe Thr Asp Leu Asn Gly Phe Gln Ile Gln Pro Arg Thr Thr Tyr
                900                 905                 910

tct aaa ctg cca cta caa gca aac ttc tac cca ata ccc aca atg gcg    2784
Ser Lys Leu Pro Leu Gln Ala Asn Phe Tyr Pro Ile Pro Thr Met Ala
                915                 920                 925

ttc ata caa gac gaa aaa tca aga tta act ttg atg acg gcc caa cca    2832
Phe Ile Gln Asp Glu Lys Ser Arg Leu Thr Leu Met Thr Ala Gln Pro
            930                 935                 940

ctg ggt gtt gcc tca ctg aag tca ggt caa ctt gag gtg gtt ttg gat    2880
Leu Gly Val Ala Ser Leu Lys Ser Gly Gln Leu Glu Val Val Leu Asp
945                 950                 955                 960

cgc cgt tta atg cag gac gac aac agg ggg gtg ggt caa ggt gtg aaa    2928
Arg Arg Leu Met Gln Asp Asp Asn Arg Gly Val Gly Gln Gly Val Lys
                965                 970                 975

gat aat tta cca act cct gag agt ttc gtg atc atg ctg gaa aga tgg    2976
Asp Asn Leu Pro Thr Pro Glu Ser Phe Val Ile Met Leu Glu Arg Trp
                980                 985                 990

acc gct att gca gcg aaa gaa agc aaa tcg tca gcg aag ctc gcg tat    3024
Thr Ala Ile Ala Ala Lys Glu Ser Lys Ser Ser Ala Lys Leu Ala Tyr
                995                 1000                1005

cca tct atg gct gtg tat cag tca tca tgg gaa ttg cta cac cca ata    3072
Pro Ser Met Ala Val Tyr Gln Ser Ser Trp Glu Leu Leu His Pro Ile
        1010                1015                1020

cgt cca atg tcg gta aat ggg ccg gta cat ttg aaa gaa gat tac cgc    3120
Arg Pro Met Ser Val Asn Gly Pro Val His Leu Lys Glu Asp Tyr Arg
1025                1030                1035                1040

tcg ctg cca cag cct tta cca tgc gac gtg cac gtg tta aac ttg cga    3168
Ser Leu Pro Gln Pro Leu Pro Cys Asp Val His Val Leu Asn Leu Arg
                1045                1050                1055

gca att cat tct aaa gat gca gtt gcc cct acc gac caa tcg gct ctg    3216
Ala Ile His Ser Lys Asp Ala Val Ala Pro Thr Asp Gln Ser Ala Leu
            1060                1065                1070

ctt cta cac aca gtt ggg cgc gaa tgc tcc ttg gac gcg gat aag tat    3264
Leu Leu His Thr Val Gly Arg Glu Cys Ser Leu Asp Ala Asp Lys Tyr
            1075                1080                1085
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ttc cac cca acg tgc ctc atg cac ggc gtc gag aaa ttg gct atc acg    3312
Phe His Pro Thr Cys Leu Met His Gly Val Glu Lys Leu Ala Ile Thr
   1090              1095              1100

atc tcg acg ctt ttt act aac tct ggc atg cgg aag acg tcg ctg tcc    3360
Ile Ser Thr Leu Phe Thr Asn Ser Gly Met Arg Lys Thr Ser Leu Ser
1105              1110              1115              1120

tta caa cac gac ggc tcg ttg ctg gac aac caa ggc ggt att aca gtt    3408
Leu Gln His Asp Gly Ser Leu Leu Asp Asn Gln Gly Gly Ile Thr Val
              1125              1130              1135

tcc cca atg gag ata caa gct tac aaa ata gta ctg acg taa           3450
Ser Pro Met Glu Ile Gln Ala Tyr Lys Ile Val Leu Thr
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  1               5              10              15

ctg ctg gtt ttc ctc agc ctg tac ata atc ctc aat ttt gcg gcg ccg    96
Leu Leu Val Phe Leu Ser Leu Tyr Ile Ile Leu Asn Phe Ala Ala Pro
             20              25              30

gca gcc acc cag ata aag ccc aac tat gag aac att gag aac aag ctg    144
Ala Ala Thr Gln Ile Lys Pro Asn Tyr Glu Asn Ile Glu Asn Lys Leu
             35              40              45

cat gag ctg gaa aat ggt ttg cag gag cac ggg gag gag atg cgg aat    192
His Glu Leu Glu Asn Gly Leu Gln Glu His Gly Glu Glu Met Arg Asn
   50              55              60

ctc agg gcg cgt ctg gcc aaa aca tcc aat cgc gac gat cca ata aga    240
Leu Arg Ala Arg Leu Ala Lys Thr Ser Asn Arg Asp Asp Pro Ile Arg
 65              70              75              80

cct cca ctt aaa gtg gct cgt tcc ccg agg cca ggg caa tgc caa gat    288
Pro Pro Leu Lys Val Ala Arg Ser Pro Arg Pro Gly Gln Cys Gln Asp
              85              90              95
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gtg gtc caa gac gtg ccc aat gtg gat gta cag atg ctg gag cta tac    336
Val Val Gln Asp Val Pro Asn Val Asp Val Gln Met Leu Glu Leu Tyr
            100              105             110

gat cgc atg tcc ttc aag gac ata gat gga ggc gtg tgg aaa cag ggc    384
Asp Arg Met Ser Phe Lys Asp Ile Asp Gly Gly Val Trp Lys Gln Gly
        115             120             125

tgg aac att aag tac gat cca ctg aag tac aac gcc cat cac aaa cta    432
Trp Asn Ile Lys Tyr Asp Pro Leu Lys Tyr Asn Ala His His Lys Leu
    130             135             140

aaa gtc ttc gtt gtg ccg cac tcg cac aac gat cct gga tgg att cag    480
Lys Val Phe Val Val Pro His Ser His Asn Asp Pro Gly Trp Ile Gln
145             150             155             160

acg ttt gag gaa tac tac cag cac gac acc aag cac atc ctg tcc aat    528
Thr Phe Glu Glu Tyr Tyr Gln His Asp Thr Lys His Ile Leu Ser Asn
                165             170             175

gca cta cgg cat ctg cac gac aat ccc gag atg aag ttc atc tgg gcg    576
Ala Leu Arg His Leu His Asp Asn Pro Glu Met Lys Phe Ile Trp Ala
            180             185             190

gaa atc tcc tac ttt gct cgg ttc tat cac gat ttg gga gag aac aaa    624
Glu Ile Ser Tyr Phe Ala Arg Phe Tyr His Asp Leu Gly Glu Asn Lys
            195             200             205

aag ctg cag atg aag tcc att gta aag aat gga cag ttg gaa ttt gtg    672
Lys Leu Gln Met Lys Ser Ile Val Lys Asn Gly Gln Leu Glu Phe Val
210             215             220

act gga gga tgg gta atg ccg gac gag gcc aac tcc cac tgg cga aac    720
Thr Gly Gly Trp Val Met Pro Asp Glu Ala Asn Ser His Trp Arg Asn
225             230             235             240

gta ctg ctg cag ctg acc gaa ggg caa aca tgg ttg aag caa ttc atg    768
Val Leu Leu Gln Leu Thr Glu Gly Gln Thr Trp Leu Lys Gln Phe Met
            245             250             255

aat gtc aca ccc act gct tcc tgg gcc atc gat ccc ttc gga cac agt    816
Asn Val Thr Pro Thr Ala Ser Trp Ala Ile Asp Pro Phe Gly His Ser
            260             265             270

ccc act atg ccg tac att ttg cag aag agt ggt ttc aag aat atg ctt    864
Pro Thr Met Pro Tyr Ile Leu Gln Lys Ser Gly Phe Lys Asn Met Leu
            275             280             285

atc caa agg acg cac tat tcg gtt aag aag gaa ctg gcc caa cag cga    912
Ile Gln Arg Thr His Tyr Ser Val Lys Lys Glu Leu Ala Gln Gln Arg
            290             295             300
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cag ctt gag ttc ctg tgg cgc cag atc tgg gac aac aaa ggg gac aca    960
Gln Leu Glu Phe Leu Trp Arg Gln Ile Trp Asp Asn Lys Gly Asp Thr
305                 310             315                 320

gct ctc ttc acc cac atg atg ccc ttc tac tcg tac gac att cct cat    1008
Ala Leu Phe Thr His Met Met Pro Phe Tyr Ser Tyr Asp Ile Pro His
                325             330             335

acc tgt ggt cca gat ccc aag gtt tgc tgt cag ttc gat ttc aaa cga    1056
Thr Cys Gly Pro Asp Pro Lys Val Cys Cys Gln Phe Asp Phe Lys Arg
                340             345             350

atg ggc tcc ttc ggt ttg agt tgt cca tgg aag gtg ccg ccg cgt aca    1104
Met Gly Ser Phe Gly Leu Ser Cys Pro Trp Lys Val Pro Pro Arg Thr
                355             360             365

atc agt gat caa aat gtg gca gca cgc tca gat ctg ctg gtt gat cag    1152
Ile Ser Asp Gln Asn Val Ala Ala Arg Ser Asp Leu Leu Val Asp Gln
                370             375             380

tgg aag aag aag gcc gag ctg tat cgc aca aac gtg ctg ctg att ccg    1200
Trp Lys Lys Lys Ala Glu Leu Tyr Arg Thr Asn Val Leu Leu Ile Pro
385                 390             395                 400

ttg ggt gac gac ttc cgc ttc aag cag aac acc gag tgg gat gtg cag    1248
Leu Gly Asp Asp Phe Arg Phe Lys Gln Asn Thr Glu Trp Asp Val Gln
                405             410             415

cgc gtg aac tac gaa agg ctg ttc gaa cac atc aac agc cag gcc cac    1296
Arg Val Asn Tyr Glu Arg Leu Phe Glu His Ile Asn Ser Gln Ala His
                420             425             430

ttc aat gtc cag gcg cag ttc ggc aca ctg cag gaa tac ttt gat gca    1344
Phe Asn Val Gln Ala Gln Phe Gly Thr Leu Gln Glu Tyr Phe Asp Ala
                435             440             445

gtg cac cag gcg gaa agg gcg gga caa gcc gag ttt ccc acg cta agc    1392
Val His Gln Ala Glu Arg Ala Gly Gln Ala Glu Phe Pro Thr Leu Ser
                450             455             460

ggt gac ttt ttc aca tac gcc gat cga tcg gat aac tat tgg agt ggc    1440
Gly Asp Phe Phe Thr Tyr Ala Asp Arg Ser Asp Asn Tyr Trp Ser Gly
465                 470             475                 480

tac tac aca tcc cgc ccg tat cat aag cgc atg gac cgc gtc ctg atg    1488
Tyr Tyr Thr Ser Arg Pro Tyr His Lys Arg Met Asp Arg Val Leu Met
                485             490             495

cac tat gta cgt gca gca gaa atg ctt tcc gcc tgg cac tcc tgg gac    1536
His Tyr Val Arg Ala Ala Glu Met Leu Ser Ala Trp His Ser Trp Asp
                500             505             510
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ggt atg gcc cgc atc gag gaa cgt ctg gag cag gcc cgc agg gag ctg     1584
Gly Met Ala Arg Ile Glu Glu Arg Leu Glu Gln Ala Arg Arg Glu Leu
        515                 520                 525

tca ttg ttc cag cac cac gac ggt ata act ggc aca gca aaa acg cac     1632
Ser Leu Phe Gln His His Asp Gly Ile Thr Gly Thr Ala Lys Thr His
        530                 535                 540

gta gtc gtc gac tac gag caa cgc atg cag gaa gct tta aaa gcc tgt     1680
Val Val Val Asp Tyr Glu Gln Arg Met Gln Glu Ala Leu Lys Ala Cys
545                 550                 555                 560

caa atg gta atg caa cag tcg gtc tac cga ttg ctg aca aag ccc tcc     1728
Gln Met Val Met Gln Gln Ser Val Tyr Arg Leu Leu Thr Lys Pro Ser
                565                 570                 575

atc tac agt ccg gac ttc agt ttc tcg tac ttt acg ctc gac gac tcc     1776
Ile Tyr Ser Pro Asp Phe Ser Phe Ser Tyr Phe Thr Leu Asp Asp Ser
            580                 585                 590

cgc tgg cca gga tct ggt gtg gag gac agt cga acc acc ata ata ctg     1824
Arg Trp Pro Gly Ser Gly Val Glu Asp Ser Arg Thr Thr Ile Ile Leu
            595                 600                 605

ggc gag gat ata ctg ccc tcc aag cat gtg gtg atg cac aac acc ctg     1872
Gly Glu Asp Ile Leu Pro Ser Lys His Val Val Met His Asn Thr Leu
        610                 615                 620

ccc cac tgg cgg gag cag ctg gtg gac ttt tat gta tcc agt ccg ttt     1920
Pro His Trp Arg Glu Gln Leu Val Asp Phe Tyr Val Ser Ser Pro Phe
625                 630                 635                 640

gta agc gtt acc gac ttg gca aac aat ccg gtg gag gct cag gtg tcc     1968
Val Ser Val Thr Asp Leu Ala Asn Asn Pro Val Glu Ala Gln Val Ser
                645                 650                 655

ccg gtg tgg agc tgg cac cac gac aca ctc aca aag act atc cac cca     2016
Pro Val Trp Ser Trp His His Asp Thr Leu Thr Lys Thr Ile His Pro
                660                 665                 670

caa ggc tcc acc acc aag tac cgc atc atc ttc aag gct cgg gtg ccg     2064
Gln Gly Ser Thr Thr Lys Tyr Arg Ile Ile Phe Lys Ala Arg Val Pro
            675                 680                 685

ccc atg ggc ttg gcc acc tac gtt tta acc atc tcc gat tcc aag cca     2112
Pro Met Gly Leu Ala Thr Tyr Val Leu Thr Ile Ser Asp Ser Lys Pro
        690                 695                 700

gag cac acc tcg tat gca tcg aat ctc ttg ctc cgt aaa aac ccg act     2160
Glu His Thr Ser Tyr Ala Ser Asn Leu Leu Leu Arg Lys Asn Pro Thr
705                 710                 715                 720
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tcg tta cca ttg ggc caa tat ccg gag gat gtg aag ttt ggc gat cct    2208
Ser Leu Pro Leu Gly Gln Tyr Pro Glu Asp Val Lys Phe Gly Asp Pro
            725             730             735

cga gag atc tca ttg cgg gtt ggt aac gga ccc acc ttg gcc ttt tcg    2256
Arg Glu Ile Ser Leu Arg Val Gly Asn Gly Pro Thr Leu Ala Phe Ser
            740             745             750

gag cag ggt ctc ctt aag tcc att cag ctt act cag gat agc cca cat    2304
Glu Gln Gly Leu Leu Lys Ser Ile Gln Leu Thr Gln Asp Ser Pro His
            755             760             765

gta ccg gtg cac ttc aag ttc ctc aag tat ggc gtt cga tcg cat ggc    2352
Val Pro Val His Phe Lys Phe Leu Lys Tyr Gly Val Arg Ser His Gly
    770             775             780

gat aga tcc ggt gcc tat ctg ttc ctg ccc aat gga cca gct tcg cca    2400
Asp Arg Ser Gly Ala Tyr Leu Phe Leu Pro Asn Gly Pro Ala Ser Pro
785             790             795             800

gtc gag ctt ggc cag cca gtg gtc ctg gtg act aag ggc aaa ctg gag    2448
Val Glu Leu Gly Gln Pro Val Val Leu Val Thr Lys Gly Lys Leu Glu
            805             810             815

tcg tcc gtg agc gtg gga ctt ccg agc gtg gtg cac cag acg ata atg    2496
Ser Ser Val Ser Val Gly Leu Pro Ser Val Val His Gln Thr Ile Met
            820             825             830

cgc ggt ggt gca cct gag att cgc aat ctg gtg gat ata ggc tca ctg    2544
Arg Gly Gly Ala Pro Glu Ile Arg Asn Leu Val Asp Ile Gly Ser Leu
            835             840             845

gac aac acg gag atc gtg atg cgc ttg gag acg cat atc gac agc ggc    2592
Asp Asn Thr Glu Ile Val Met Arg Leu Glu Thr His Ile Asp Ser Gly
850             855             860

gat atc ttc tac acg gat ctc aat gga ttg caa ttt atc aag agg cgg    2640
Asp Ile Phe Tyr Thr Asp Leu Asn Gly Leu Gln Phe Ile Lys Arg Arg
865             870             875             880

cgt ttg gac aaa tta cct ttg cag gcc aac tat tat ccc ata cct tct    2688
Arg Leu Asp Lys Leu Pro Leu Gln Ala Asn Tyr Tyr Pro Ile Pro Ser
                885             890             895

ggt atg ttc att gag gat gcc aat acg cga ctc act ctc ctc acg ggt    2736
Gly Met Phe Ile Glu Asp Ala Asn Thr Arg Leu Thr Leu Leu Thr Gly
            900             905             910

caa ccg ctg ggt gga tct tct ctg gcc tcg ggc gag cta gag att atg    2784
Gln Pro Leu Gly Gly Ser Ser Leu Ala Ser Gly Glu Leu Glu Ile Met
            915             920             925
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caa gat cgt cgc ctg gcc agc gat gat gaa cgc ggc ctg gga cag ggt        2832
Gln Asp Arg Arg Leu Ala Ser Asp Asp Glu Arg Gly Leu Gly Gln Gly
    930                 935                 940

gtt ttg gac aac aag ccg gtg ctg cat att tat cgg ctg gtg ctg gag        2880
Val Leu Asp Asn Lys Pro Val Leu His Ile Tyr Arg Leu Val Leu Glu
945                 950                 955                 960

aag gtt aac aac tgt gtc cga ccg tca aag ctt cat cct gcc ggc tat        2928
Lys Val Asn Asn Cys Val Arg Pro Ser Lys Leu His Pro Ala Gly Tyr
                965                 970                 975

ttg aca agt gcc gca cac aaa gca tcg cag tca ctg ctg gat cca ctg        2976
Leu Thr Ser Ala Ala His Lys Ala Ser Gln Ser Leu Leu Asp Pro Leu
                980                 985                 990

gac aag ttt ata ttc gct gaa aat gag tgg atc ggg gca cag ggg caa        3024
Asp Lys Phe Ile Phe Ala Glu Asn Glu Trp Ile Gly Ala Gln Gly Gln
        995                 1000                1005

ttt ggt ggc gat cat cct tcg gct cgt gag gat ctc gat gtg tcg gtg        3072
Phe Gly Gly Asp His Pro Ser Ala Arg Glu Asp Leu Asp Val Ser Val
    1010                1015                1020

atg aga cgc tta acc aag agc tcg gcc aaa acc cag cga gta ggc tac        3120
Met Arg Arg Leu Thr Lys Ser Ser Ala Lys Thr Gln Arg Val Gly Tyr
1025                1030                1035                1040

gtt ctg cac cgc acc aat ctg atg caa tgc ggc act cca gag gag cat        3168
Val Leu His Arg Thr Asn Leu Met Gln Cys Gly Thr Pro Glu Glu His
                1045                1050                1055

aca cag aag ctg gat gtg tgc cac cta ctg ccg aat gtg gcg aga tgc        3216
Thr Gln Lys Leu Asp Val Cys His Leu Leu Pro Asn Val Ala Arg Cys
                1060                1065                1070

gag cgc acg acg ctg act ttc ctg cag aat ttg gag cac ttg gat ggc        3264
Glu Arg Thr Thr Leu Thr Phe Leu Gln Asn Leu Glu His Leu Asp Gly
        1075                1080                1085

atg gtg gcg ccg gaa gtg tgc ccc atg gaa acc gcc gct tat gtg agc        3312
Met Val Ala Pro Glu Val Cys Pro Met Glu Thr Ala Ala Tyr Val Ser
    1090                1095                1100

agt cac tca agc tga                                                     3327
Ser His Ser Ser
1105
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Met Lys Leu Ser Arg Gln Phe Thr Val Phe Gly Ser Ala Ile Phe Cys
 1               5                  10                  15

gtg gtg att ttc tcg ctc tac ctg atg ctg gac cgg ggt cac tta gac    96
Val Val Ile Phe Ser Leu Tyr Leu Met Leu Asp Arg Gly His Leu Asp
                20                  25                  30

tac ccc agg aac ccg cgc cgc gag ggc tcc ttc cct cag ggc cag ctc   144
Tyr Pro Arg Asn Pro Arg Arg Glu Gly Ser Phe Pro Gln Gly Gln Leu
                35                  40                  45

tca atg ttg caa gaa aaa ata gac cat ttg gag cgt ttg cta gct gag   192
Ser Met Leu Gln Glu Lys Ile Asp His Leu Glu Arg Leu Leu Ala Glu
        50                  55                  60

aat aat gag atc atc tca aat att aga gac tca gtc atc aat ttg agt   240
Asn Asn Glu Ile Ile Ser Asn Ile Arg Asp Ser Val Ile Asn Leu Ser
 65                  70                  75                  80

gag tct gtg gag gat ggt ccg aaa agt tca caa agc aat ttc agc caa   288
Glu Ser Val Glu Asp Gly Pro Lys Ser Ser Gln Ser Asn Phe Ser Gln
                    85                  90                  95

ggt gct ggc tca cat ctt ctg ccc tca caa tta tcc ctc tca gtt gac   336
Gly Ala Gly Ser His Leu Leu Pro Ser Gln Leu Ser Leu Ser Val Asp
                100                 105                 110

act gca gac tgt ctg ttt gct tca caa agt gga agt cac aat tca gat   384
Thr Ala Asp Cys Leu Phe Ala Ser Gln Ser Gly Ser His Asn Ser Asp
                115                 120                 125

gtg cag atg ttg gat gtt tac agt cta att tct ttt gac aat cca gat   432
Val Gln Met Leu Asp Val Tyr Ser Leu Ile Ser Phe Asp Asn Pro Asp
        130                 135                 140

ggt gga gtt tgg aag caa gga ttt gac att act tat gaa tct aat gaa   480
Gly Gly Val Trp Lys Gln Gly Phe Asp Ile Thr Tyr Glu Ser Asn Glu
145                 150                 155                 160

tgg gac act gaa ccc ctt caa gtc ttt gtg gtg cct cat tcc cat aac   528
Trp Asp Thr Glu Pro Leu Gln Val Phe Val Val Pro His Ser His Asn
                165                 170                 175

gac cca ggt tgg ttg aag act ttc aat gac tac ttt aga gac aag act   576
Asp Pro Gly Trp Leu Lys Thr Phe Asn Asp Tyr Phe Arg Asp Lys Thr
                180                 185                 190
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cag tat att ttt aat aac atg gtc cta aag ctg aaa gaa gac tca cgg    624
Gln Tyr Ile Phe Asn Asn Met Val Leu Lys Leu Lys Glu Asp Ser Arg
        195             200                 205

agg aag ttt att tgg tct gag atc tct tac ctt tca aag tgg tgg gat    672
Arg Lys Phe Ile Trp Ser Glu Ile Ser Tyr Leu Ser Lys Trp Trp Asp
    210             215             220

att ata gat att cag aag aag gat gct gtt aaa agt tta ata gaa aat    720
Ile Ile Asp Ile Gln Lys Lys Asp Ala Val Lys Ser Leu Ile Glu Asn
225             230             235             240

ggt cag ctt gaa att gtg aca ggt ggc tgg gtt atg cct gat gaa gct    768
Gly Gln Leu Glu Ile Val Thr Gly Gly Trp Val Met Pro Asp Glu Ala
                245             250             255

act cca cat tat ttt gcc tta att gat caa cta att gaa gga cat cag    816
Thr Pro His Tyr Phe Ala Leu Ile Asp Gln Leu Ile Glu Gly His Gln
            260             265             270

tgg ctg gaa aat aat ata gga gtg aaa cct cgg tcc ggc tgg gct att    864
Trp Leu Glu Asn Asn Ile Gly Val Lys Pro Arg Ser Gly Trp Ala Ile
            275             280             285

gat ccc ttt gga cac tca cca aca atg gct tat ctt cta aac cgt gct    912
Asp Pro Phe Gly His Ser Pro Thr Met Ala Tyr Leu Leu Asn Arg Ala
    290             295             300

gga ctt tct cac atg ctt atc cag aga gtt cat tat gca gtt aaa aaa    960
Gly Leu Ser His Met Leu Ile Gln Arg Val His Tyr Ala Val Lys Lys
305             310             315             320

cac ttt gca ctg cat aaa aca ttg gag ttt ttt tgg aga cag aat tgg   1008
His Phe Ala Leu His Lys Thr Leu Glu Phe Phe Trp Arg Gln Asn Trp
            325             330             335

gat ctg gga tct gtc aca gat att tta tgc cac atg atg ccc ttc tac   1056
Asp Leu Gly Ser Val Thr Asp Ile Leu Cys His Met Met Pro Phe Tyr
            340             345             350

agc tat gac atc cct cac act tgt gga cct gat cct aaa ata tgc tgc   1104
Ser Tyr Asp Ile Pro His Thr Cys Gly Pro Asp Pro Lys Ile Cys Cys
            355             360             365

cag ttt gat ttt aaa cgt ctt cct gga ggc aga ttt ggt tgt ccc tgg   1152
Gln Phe Asp Phe Lys Arg Leu Pro Gly Gly Arg Phe Gly Cys Pro Trp
    370             375             380

gga gtc ccc cca gaa aca ata cat cct gga aat gtc caa agc agg gct   1200
Gly Val Pro Pro Glu Thr Ile His Pro Gly Asn Val Gln Ser Arg Ala
385             390             395             400
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cgg atg cta cta gat cag tac cga aag aag tca aag ctt ttt cga acc      1248
Arg Met Leu Leu Asp Gln Tyr Arg Lys Lys Ser Lys Leu Phe Arg Thr
            405                 410                 415

aaa gtt ctc ctg gct cca cta gga gat gat ttc cgc tac tgt gaa tac      1296
Lys Val Leu Leu Ala Pro Leu Gly Asp Asp Phe Arg Tyr Cys Glu Tyr
            420                 425                 430

acg gaa tgg gat tta cag ttt aag aat tat cag cag ctt ttt gat tat      1344
Thr Glu Trp Asp Leu Gln Phe Lys Asn Tyr Gln Gln Leu Phe Asp Tyr
            435                 440                 445

atg aat tct cag tcc aag ttt aaa gtt aag ata cag ttt gga act tta      1392
Met Asn Ser Gln Ser Lys Phe Lys Val Lys Ile Gln Phe Gly Thr Leu
            450                 455                 460

tca gat ttt ttt gat gcg ctg gat aaa gca gat gaa act cag aga gac      1440
Ser Asp Phe Phe Asp Ala Leu Asp Lys Ala Asp Glu Thr Gln Arg Asp
465                 470                 475                 480

aag ggc caa tcg atg ttc cct gtt tta agt gga gat ttt ttc act tat      1488
Lys Gly Gln Ser Met Phe Pro Val Leu Ser Gly Asp Phe Phe Thr Tyr
                485                 490                 495

gcc gat cga gat gat cat tac tgg agt ggc tat ttt aca tcc aga ccc      1536
Ala Asp Arg Asp Asp His Tyr Trp Ser Gly Tyr Phe Thr Ser Arg Pro
            500                 505                 510

ttt tac aaa cga atg gac aga atc atg gaa tct cat tta agg gct gct      1584
Phe Tyr Lys Arg Met Asp Arg Ile Met Glu Ser His Leu Arg Ala Ala
            515                 520                 525

gaa att ctt tac tat ttc gcc ctg aga caa gct cac aaa tac aag ata      1632
Glu Ile Leu Tyr Tyr Phe Ala Leu Arg Gln Ala His Lys Tyr Lys Ile
            530                 535                 540

aat aaa ttt ctc tca tca tca ctt tac acg gca ctg aca gaa gcc aga      1680
Asn Lys Phe Leu Ser Ser Ser Leu Tyr Thr Ala Leu Thr Glu Ala Arg
545                 550                 555                 560

agg aat ttg gga ctg ttt caa cat cat gat gct atc aca gga act gca      1728
Arg Asn Leu Gly Leu Phe Gln His His Asp Ala Ile Thr Gly Thr Ala
                565                 570                 575

aaa gac tgg gtg gtt gtg gat tat ggt acc aga ctt ttt cat tcg tta      1776
Lys Asp Trp Val Val Val Asp Tyr Gly Thr Arg Leu Phe His Ser Leu
                580                 585                 590

atg gtt ttg gag aag ata att gga aat tct gca ttt ctt ctt att ggg      1824
Met Val Leu Glu Lys Ile Ile Gly Asn Ser Ala Phe Leu Leu Ile Gly
            595                 600                 605
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aag gac aaa ctc aca tac gac tct tac tct cct gat acc ttc ctg gag    1872
Lys Asp Lys Leu Thr Tyr Asp Ser Tyr Ser Pro Asp Thr Phe Leu Glu
    610             615             620

atg gat ttg aaa caa aaa tca caa gat tct ctg cca caa aaa aat ata    1920
Met Asp Leu Lys Gln Lys Ser Gln Asp Ser Leu Pro Gln Lys Asn Ile
625             630             635             640

ata agg ctg agt gcg gag cca agg tac ctt gtg gtc tat aat cct tta    1968
Ile Arg Leu Ser Ala Glu Pro Arg Tyr Leu Val Val Tyr Asn Pro Leu
            645             650             655

gaa caa gac cga atc tcg ttg gtc tca gtc tat gtg agt tcc ccg aca    2016
Glu Gln Asp Arg Ile Ser Leu Val Ser Val Tyr Val Ser Ser Pro Thr
            660             665             670

gtg caa gtg ttc tct gct tca gga aaa cct gtg gaa gtt caa gtc agc    2064
Val Gln Val Phe Ser Ala Ser Gly Lys Pro Val Glu Val Gln Val Ser
            675             680             685

gca gtt tgg gat aca gca aat act att tca gaa aca gcc tat gag atc    2112
Ala Val Trp Asp Thr Ala Asn Thr Ile Ser Glu Thr Ala Tyr Glu Ile
    690             695             700

tct ttt cga gca cat ata ccg cca ttg gga ctg aaa gtg tat aag att    2160
Ser Phe Arg Ala His Ile Pro Pro Leu Gly Leu Lys Val Tyr Lys Ile
705             710             715             720

ttg gaa tca gca agt tca aat tca cat tta gct gat tat gtc ttg tat    2208
Leu Glu Ser Ala Ser Ser Asn Ser His Leu Ala Asp Tyr Val Leu Tyr
            725             730             735

aag aat aaa gta gaa gat agc gga att ttc acc ata aag aat atg ata    2256
Lys Asn Lys Val Glu Asp Ser Gly Ile Phe Thr Ile Lys Asn Met Ile
            740             745             750

aat act gaa gaa ggt ata aca cta gag aac tcc ttt gtt tta ctt cgg    2304
Asn Thr Glu Glu Gly Ile Thr Leu Glu Asn Ser Phe Val Leu Leu Arg
            755             760             765

ttt gat caa act gga ctt atg aag caa atg atg act aaa gaa gat ggt    2352
Phe Asp Gln Thr Gly Leu Met Lys Gln Met Met Thr Lys Glu Asp Gly
    770             775             780

aaa cac cat gaa gta aat gtg caa ttt tca tgg tat gga acc aca att    2400
Lys His His Glu Val Asn Val Gln Phe Ser Trp Tyr Gly Thr Thr Ile
785             790             795             800

aaa aga gac aaa agt ggt gcc tac ctc ttc tta cct gat ggt aat gcc    2448
Lys Arg Asp Lys Ser Gly Ala Tyr Leu Phe Leu Pro Asp Gly Asn Ala
            805             810             815
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aag cct tat gtt tac aca aca ccg ccc ttt gtc aga gtg aca cat gga      2496
Lys Pro Tyr Val Tyr Thr Thr Pro Pro Phe Val Arg Val Thr His Gly
            820             825             830

agg att tat tcg gaa gtg act tgc ttt ttt gac cat gtt act cat aga      2544
Arg Ile Tyr Ser Glu Val Thr Cys Phe Phe Asp His Val Thr His Arg
            835             840             845

gtc cga cta tac cac ata cag gga ata gaa gga cag tct gtg gaa gtt      2592
Val Arg Leu Tyr His Ile Gln Gly Ile Glu Gly Gln Ser Val Glu Val
    850                 855             860

tcc aat att gtg gac atc cga aaa gta tat aac cgt gag att gca atg      2640
Ser Asn Ile Val Asp Ile Arg Lys Val Tyr Asn Arg Glu Ile Ala Met
865                 870             875                 880

aaa att tct tct gat ata aaa agc caa aat aga ttt tat act gac cta      2688
Lys Ile Ser Ser Asp Ile Lys Ser Gln Asn Arg Phe Tyr Thr Asp Leu
                885             890             895

aat ggg tac cag att caa cct aga atg aca ctg agc aaa ttg cct ctt      2736
Asn Gly Tyr Gln Ile Gln Pro Arg Met Thr Leu Ser Lys Leu Pro Leu
                900             905             910

caa gca aat gtc tat ccc atg acc aca atg gcc tat atc cag gat gcc      2784
Gln Ala Asn Val Tyr Pro Met Thr Thr Met Ala Tyr Ile Gln Asp Ala
            915             920             925

aaa cat cgt ttg aca ctg ctc tct gct cag tca tta ggg gtt tcg agt      2832
Lys His Arg Leu Thr Leu Leu Ser Ala Gln Ser Leu Gly Val Ser Ser
    930                 935             940

ttg aat agt ggt cag att gaa gtt atc atg gat cga aga ctc atg caa      2880
Leu Asn Ser Gly Gln Ile Glu Val Ile Met Asp Arg Arg Leu Met Gln
945                 950             955                 960

gat gat aat cgt ggc ctt gag caa ggt atc cag gat aac aag att aca      2928
Asp Asp Asn Arg Gly Leu Glu Gln Gly Ile Gln Asp Asn Lys Ile Thr
                965             970             975

gct aat cta ttt cga ata cta cta gaa aaa aga agt gct gtt aat acg      2976
Ala Asn Leu Phe Arg Ile Leu Leu Glu Lys Arg Ser Ala Val Asn Thr
                980             985             990

gaa gaa gaa aag aag tcg gtc agt tat cct tct ctc ctt agc cac ata      3024
Glu Glu Glu Lys Lys Ser Val Ser Tyr Pro Ser Leu Leu Ser His Ile
            995             1000            1005

act tct tct ctc atg aat cat cca gtc att cca atg gca aat aag ttc      3072
Thr Ser Ser Leu Met Asn His Pro Val Ile Pro Met Ala Asn Lys Phe
    1010            1015            1020
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tcc tca cct acc ctt gag ctg caa ggt gaa ttc tct cca tta cag tca      3120
Ser Ser Pro Thr Leu Glu Leu Gln Gly Glu Phe Ser Pro Leu Gln Ser
1025               1030             1035                1040


tct ttg cct tgt gac att cat ctg gtt aat ttg aga aca ata cag tca      3168
Ser Leu Pro Cys Asp Ile His Leu Val Asn Leu Arg Thr Ile Gln Ser
             1045             1050             1055


aag gtg ggc aat ggg cac tcc aat gag gca gcc ttg atc ctc cac aga      3216
Lys Val Gly Asn Gly His Ser Asn Glu Ala Ala Leu Ile Leu His Arg
             1060             1065             1070


aaa ggg ttt gat tgt cgg ttc tct agc aaa ggc aca ggg ctg ttt tgt      3264
Lys Gly Phe Asp Cys Arg Phe Ser Ser Lys Gly Thr Gly Leu Phe Cys
       1075             1080             1085


tct act act cag gga aag ata ttg gta cag aaa ctt tta aac aag ttt      3312
Ser Thr Thr Gln Gly Lys Ile Leu Val Gln Lys Leu Leu Asn Lys Phe
     1090             1095             1100


att gtc gaa agt ctc aca cct tca tca cta tcc ttg atg cat tca cct      3360
Ile Val Glu Ser Leu Thr Pro Ser Ser Leu Ser Leu Met His Ser Pro
1105             1110             1115                1120


ccc ggc act cag aat ata agt gag atc aac ttg agt cca atg gaa atc      3408
Pro Gly Thr Gln Asn Ile Ser Glu Ile Asn Leu Ser Pro Met Glu Ile
             1125             1130             1135


agc aca ttc cga atc cag ttg agg tga                                  3435
Ser Thr Phe Arg Ile Gln Leu Arg
           1140
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atg aag tta agt cgc cag ttc acc gtg ttt ggc agc gcg atc ttc tgc      48
Met Lys Leu Ser Arg Gln Phe Thr Val Phe Gly Ser Ala Ile Phe Cys
  1               5               10              15


gtc gta atc ttc tca ctc tac ctg atg ctg gac agg ggt cac ttg gac      96
Val Val Ile Phe Ser Leu Tyr Leu Met Leu Asp Arg Gly His Leu Asp
             20              25              30
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tac cct cgg ggc ccg cgc cag gag ggc tcc ttt ccg cag ggc cag ctt    144
Tyr Pro Arg Gly Pro Arg Gln Glu Gly Ser Phe Pro Gln Gly Gln Leu
        35              40              45

tca ata ttg caa gaa aag att gac cat ttg gag cgt ttg ctc gct gag    192
Ser Ile Leu Gln Glu Lys Ile Asp His Leu Glu Arg Leu Leu Ala Glu
        50              55              60

aac aac gag atc atc tca aat atc aga gac tca gtc atc aac ctg agc    240
Asn Asn Glu Ile Ile Ser Asn Ile Arg Asp Ser Val Ile Asn Leu Ser
65              70              75              80

gag tct gtg gag gac ggc ccg cgg ggg tca cca ggc aac gcc agc caa    288
Glu Ser Val Glu Asp Gly Pro Arg Gly Ser Pro Gly Asn Ala Ser Gln
            85              90              95

ggc tcc atc cac ctc cac tcg cca cag ttg gcc ctg cag gct gac ccc    336
Gly Ser Ile His Leu His Ser Pro Gln Leu Ala Leu Gln Ala Asp Pro
            100             105             110

aga gac tgt ttg ttt gct tca cag agt ggg agt cag ccc cgg gat gtg    384
Arg Asp Cys Leu Phe Ala Ser Gln Ser Gly Ser Gln Pro Arg Asp Val
            115             120             125

cag atg ttg gat gtt tac gat ctg att cct ttt gat aat cca gat ggt    432
Gln Met Leu Asp Val Tyr Asp Leu Ile Pro Phe Asp Asn Pro Asp Gly
            130             135             140

gga gtt tgg aag caa gga ttt gac att aag tat gaa gcg gat gag tgg    480
Gly Val Trp Lys Gln Gly Phe Asp Ile Lys Tyr Glu Ala Asp Glu Trp
145             150             155             160

gac cat gag ccc ctg caa gtg ttt gtg gtg cct cac tcc cat aat gac    528
Asp His Glu Pro Leu Gln Val Phe Val Val Pro His Ser His Asn Asp
                165             170             175

cca ggt tgg ttg aag act ttc aat gac tac ttt aga gac aag act cag    576
Pro Gly Trp Leu Lys Thr Phe Asn Asp Tyr Phe Arg Asp Lys Thr Gln
            180             185             190

tat att ttt aat aac atg gtc cta aag ctg aaa gaa gac tca agc agg    624
Tyr Ile Phe Asn Asn Met Val Leu Lys Leu Lys Glu Asp Ser Ser Arg
            195             200             205

aag ttt atg tgg tct gag atc tct tac ctt gca aaa tgg tgg gat att    672
Lys Phe Met Trp Ser Glu Ile Ser Tyr Leu Ala Lys Trp Trp Asp Ile
            210             215             220

ata gat att ccg aag aag gaa gct gtt aaa agt tta cta cag aat ggt    720
Ile Asp Ile Pro Lys Lys Glu Ala Val Lys Ser Leu Leu Gln Asn Gly
225             230             235             240
```

```
cag ctg gaa att gtg acc ggt ggc tgg gtt atg cct gat gaa gcc act    768
Gln Leu Glu Ile Val Thr Gly Gly Trp Val Met Pro Asp Glu Ala Thr
                245                     250                 255

cca cat tat ttt gcc tta att gac caa cta att gaa ggg cac caa tgg    816
Pro His Tyr Phe Ala Leu Ile Asp Gln Leu Ile Glu Gly His Gln Trp
                260                     265                 270

ctg gaa aaa aat cta gga gtg aaa cct cga tcg ggc tgg gcc ata gat    864
Leu Glu Lys Asn Leu Gly Val Lys Pro Arg Ser Gly Trp Ala Ile Asp
            275                 280                 285

ccc ttt ggt cat tca ccc aca atg gct tat ctt cta aag cgt gct gga    912
Pro Phe Gly His Ser Pro Thr Met Ala Tyr Leu Leu Lys Arg Ala Gly
        290                 295                 300

ttt tca cac atg ctc atc cag aga gtc cat tat gca atc aaa aaa cac    960
Phe Ser His Met Leu Ile Gln Arg Val His Tyr Ala Ile Lys Lys His
305                     310                 315                 320

ttc tct ttg cat aaa acg ctg gag ttt ttc tgg aga cag aat tgg gat   1008
Phe Ser Leu His Lys Thr Leu Glu Phe Phe Trp Arg Gln Asn Trp Asp
                325                 330                 335

ctt gga tct gct aca gac att ttg tgc cat atg atg ccc ttc tac agc   1056
Leu Gly Ser Ala Thr Asp Ile Leu Cys His Met Met Pro Phe Tyr Ser
                340                 345                 350

tac gac atc cct cac acc tgt ggg cct gat cct aaa ata tgc tgc cag   1104
Tyr Asp Ile Pro His Thr Cys Gly Pro Asp Pro Lys Ile Cys Cys Gln
                355                 360                 365

ttt gat ttt aaa cgg ctt cct gga ggc aga tat ggt tgt ccc tgg gga   1152
Phe Asp Phe Lys Arg Leu Pro Gly Gly Arg Tyr Gly Cys Pro Trp Gly
        370                 375                 380

gtt ccc cca gaa gca ata tct cct gga aat gtc caa agc agg gct cag   1200
Val Pro Pro Glu Ala Ile Ser Pro Gly Asn Val Gln Ser Arg Ala Gln
385                     390                 395                 400

atg cta ttg gat cag tac cgg aaa aag tca aaa ctt ttc cgc act aaa   1248
Met Leu Leu Asp Gln Tyr Arg Lys Lys Ser Lys Leu Phe Arg Thr Lys
                405                 410                 415

gtt ctg ctg gct cca ctg gga gac gac ttt cgg ttc agt gaa tac aca   1296
Val Leu Leu Ala Pro Leu Gly Asp Asp Phe Arg Phe Ser Glu Tyr Thr
                420                 425                 430

gag tgg gat ctg cag tgc agg aac tac gag caa ctg ttc agt tac atg   1344
Glu Trp Asp Leu Gln Cys Arg Asn Tyr Glu Gln Leu Phe Ser Tyr Met
            435                 440                 445
```

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aac tcg cag cct cat ctg aaa gtg aag atc cag ttt gga acc ttg tca      1392
Asn Ser Gln Pro His Leu Lys Val Lys Ile Gln Phe Gly Thr Leu Ser
    450                 455                 460

gat tat ttc gac gca ttg gag aaa gcg gtg gca gcc gag aag aag agt      1440
Asp Tyr Phe Asp Ala Leu Glu Lys Ala Val Ala Ala Glu Lys Lys Ser
465                 470                 475                 480

agc cag tct gtg ttc cct gcc ctg agt gga gac ttc ttc acg tac gct      1488
Ser Gln Ser Val Phe Pro Ala Leu Ser Gly Asp Phe Phe Thr Tyr Ala
                485                 490                 495

gac aga gac gac cat tac tgg agt ggc tac ttc acg tcc aga cct ttc      1536
Asp Arg Asp Asp His Tyr Trp Ser Gly Tyr Phe Thr Ser Arg Pro Phe
                500                 505                 510

tac aaa cga atg gac aga ata atg gaa tct cgt ata agg gct gct gaa      1584
Tyr Lys Arg Met Asp Arg Ile Met Glu Ser Arg Ile Arg Ala Ala Glu
            515                 520                 525

att ctt tac cag ttg gcc ttg aaa caa gct cag aaa tac aag ata aat      1632
Ile Leu Tyr Gln Leu Ala Leu Lys Gln Ala Gln Lys Tyr Lys Ile Asn
    530                 535                 540

aaa ttt ctt tca tca cct cat tac aca aca ctg aca gaa gcc aga agg      1680
Lys Phe Leu Ser Ser Pro His Tyr Thr Thr Leu Thr Glu Ala Arg Arg
545                 550                 555                 560

aac tta gga cta ttt cag cat cat gat gcc atc aca gga acc gcg aaa      1728
Asn Leu Gly Leu Phe Gln His His Asp Ala Ile Thr Gly Thr Ala Lys
                565                 570                 575

gac tgg gtg gtt gtg gac tat ggt acc aga ctc ttt cag tca tta aat      1776
Asp Trp Val Val Val Asp Tyr Gly Thr Arg Leu Phe Gln Ser Leu Asn
                580                 585                 590

tct ttg gag aag ata att gga gat tct gca ttt ctt ctc att tta aag      1824
Ser Leu Glu Lys Ile Ile Gly Asp Ser Ala Phe Leu Leu Ile Leu Lys
        595                 600                 605

gac aaa aag ctg tac cag tca gat cct tcc aaa gcc ttc tta gag atg      1872
Asp Lys Lys Leu Tyr Gln Ser Asp Pro Ser Lys Ala Phe Leu Glu Met
    610                 615                 620

gat acg aag caa agt tca caa gat tct ctg ccc caa aaa att ata ata      1920
Asp Thr Lys Gln Ser Ser Gln Asp Ser Leu Pro Gln Lys Ile Ile Ile
625                 630                 635                 640

caa ctg agc gca cag gag cca agg tac ctt gtg gtc tac aat ccc ttt      1968
Gln Leu Ser Ala Gln Glu Pro Arg Tyr Leu Val Val Tyr Asn Pro Phe
                645                 650                 655
```

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gaa caa gaa cgg cat tca gtg gtg tcc atc cgg gta aac tcc gcc aca    2016
Glu Gln Glu Arg His Ser Val Val Ser Ile Arg Val Asn Ser Ala Thr
            660             665             670

ggg aaa gtg ctg tct gat tcg gga aaa ccg gtg gag gtt caa gtc agt    2064
Gly Lys Val Leu Ser Asp Ser Gly Lys Pro Val Glu Val Gln Val Ser
            675             680             685

gca gtt tgg aac gac atg agg aca att tca caa gca gcc tat gag gtt    2112
Ala Val Trp Asn Asp Met Arg Thr Ile Ser Gln Ala Ala Tyr Glu Val
            690             695             700

tct ttt cta gct cat ata cca cca ctg gga ctg aaa gtg ttt aag atc    2160
Ser Phe Leu Ala His Ile Pro Pro Leu Gly Leu Lys Val Phe Lys Ile
705             710             715             720

tta gag tca caa agt tca agc tca cac ttg gct gat tat gtc cta tat    2208
Leu Glu Ser Gln Ser Ser Ser Ser His Leu Ala Asp Tyr Val Leu Tyr
            725             730             735

aat aat gat gga cta gca gaa aat gga ata ttc cac gtg aag aac atg    2256
Asn Asn Asp Gly Leu Ala Glu Asn Gly Ile Phe His Val Lys Asn Met
            740             745             750

gtg gat gct gga gat gcc ata aca ata gag aat ccc ttc ctg gcg att    2304
Val Asp Ala Gly Asp Ala Ile Thr Ile Glu Asn Pro Phe Leu Ala Ile
            755             760             765

tgg ttt gac cga tct ggg ctg atg gag aaa gtg aga agg aaa gaa gac    2352
Trp Phe Asp Arg Ser Gly Leu Met Glu Lys Val Arg Arg Lys Glu Asp
770             775             780

agt aga cag cat gaa ctg aag gtc cag ttc ctg tgg tac gga acc acc    2400
Ser Arg Gln His Glu Leu Lys Val Gln Phe Leu Trp Tyr Gly Thr Thr
785             790             795             800

aac aaa agg gac aag agc ggt gcc tac ctc ttc ctg cct gac ggg cag    2448
Asn Lys Arg Asp Lys Ser Gly Ala Tyr Leu Phe Leu Pro Asp Gly Gln
                805             810             815

ggc cag cca tat gtt tcc cta aga ccg ccc ttt gtc aga gtg aca cgt    2496
Gly Gln Pro Tyr Val Ser Leu Arg Pro Pro Phe Val Arg Val Thr Arg
                820             825             830

gga agg atc tac tca gat gtg acc tgt ttc ctc gaa cac gtt act cac    2544
Gly Arg Ile Tyr Ser Asp Val Thr Cys Phe Leu Glu His Val Thr His
                835             840             845

aaa gtc cgc ctg tac aac att cag gga ata gaa ggt cag tcc atg gaa    2592
Lys Val Arg Leu Tyr Asn Ile Gln Gly Ile Glu Gly Gln Ser Met Glu
            850             855             860
```

```
gtt tct aat att gta aac atc agg aat gtg cat aac cgt gag att gta    2640
Val Ser Asn Ile Val Asn Ile Arg Asn Val His Asn Arg Glu Ile Val
865                 870                 875                 880

atg aga att tca tct aaa ata aac aac caa aat aga tat tat act gac    2688
Met Arg Ile Ser Ser Lys Ile Asn Asn Gln Asn Arg Tyr Tyr Thr Asp
                885                 890                 895

cta aat gga tat cag att cag cct aga agg acc atg agc aaa ttg cct    2736
Leu Asn Gly Tyr Gln Ile Gln Pro Arg Arg Thr Met Ser Lys Leu Pro
                900                 905                 910

ctt caa gcc aac gtt tac ccg atg tgc aca atg gcg tat atc cag gat    2784
Leu Gln Ala Asn Val Tyr Pro Met Cys Thr Met Ala Tyr Ile Gln Asp
            915                 920                 925

gct gag cac cgg ctc acg ctg ctc tct gct cag tct cta ggt gct tcc    2832
Ala Glu His Arg Leu Thr Leu Leu Ser Ala Gln Ser Leu Gly Ala Ser
        930                 935                 940

agc atg gct tct ggt cag att gaa gtc ttc atg gat cga agg ctc atg    2880
Ser Met Ala Ser Gly Gln Ile Glu Val Phe Met Asp Arg Arg Leu Met
945                 950                 955                 960

cag gat gat aac cgt ggc ctt ggg caa ggc gtc cat gac aat aag att    2928
Gln Asp Asp Asn Arg Gly Leu Gly Gln Gly Val His Asp Asn Lys Ile
                965                 970                 975

aca gct aat ttg ttt cga atc ctc ctc gag aag aga agc gct gtg aac    2976
Thr Ala Asn Leu Phe Arg Ile Leu Leu Glu Lys Arg Ser Ala Val Asn
                980                 985                 990

atg gaa gaa gaa aag aag agc cct gtc agc tac cct tcc ctc ctc agc    3024
Met Glu Glu Glu Lys Lys Ser Pro Val Ser Tyr Pro Ser Leu Leu Ser
        995                 1000                1005

cac atg act tcg tcc ttc ctc aac cat ccc ttt ctc ccc atg gta cta    3072
His Met Thr Ser Ser Phe Leu Asn His Pro Phe Leu Pro Met Val Leu
    1010                1015                1020

agt ggc cag ctc ccc tcc cct gcc ttt gag ctg ctg agt gaa ttt cct    3120
Ser Gly Gln Leu Pro Ser Pro Ala Phe Glu Leu Leu Ser Glu Phe Pro
1025                1030                1035                1040

ctg ctg cag tcc tct cta cct tgt gat atc cat ctg gtc aac ctg cgg    3168
Leu Leu Gln Ser Ser Leu Pro Cys Asp Ile His Leu Val Asn Leu Arg
                1045                1050                1055

aca ata caa tca aag atg ggc aaa ggc tat tcg gat gag gca gcc ttg    3216
Thr Ile Gln Ser Lys Met Gly Lys Gly Tyr Ser Asp Glu Ala Ala Leu
            1060                1065                1070
```

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atc ctc cac agg aaa ggg ttt gat tgc cag ttc tcc agc aga ggc atc      3264
Ile Leu His Arg Lys Gly Phe Asp Cys Gln Phe Ser Ser Arg Gly Ile
        1075                1080                1085

ggg cta ccc tgt tcc act act cag gga aag atg tca gtt ctg aaa ctt      3312
Gly Leu Pro Cys Ser Thr Thr Gln Gly Lys Met Ser Val Leu Lys Leu
    1090                1095                1100

ttc aac aag ttt gct gtg gag agt ctc gtc cct tcc tct ctg tcc ttg      3360
Phe Asn Lys Phe Ala Val Glu Ser Leu Val Pro Ser Ser Leu Ser Leu
1105                1110                1115                1120

atg cac tcc cct cca gat gcc cag aac atg agt gaa gtc agc ctg agc      3408
Met His Ser Pro Pro Asp Ala Gln Asn Met Ser Glu Val Ser Leu Ser
                1125                1130                1135

ccc atg gag atc agc acg ttc cgt atc cgc ttg cgt tgg acc tga          3453
Pro Met Glu Ile Ser Thr Phe Arg Ile Arg Leu Arg Trp Thr
                1140                1145                1150
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<210> 55
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<212> DNA
<213> Rattus norvegicus

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<222> (1)..(3837)

<400> 55
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atg gcc tgt ata ggt gga gcc cag ggg caa cgg cag gcc gtg gaa aag       48
Met Ala Cys Ile Gly Gly Ala Gln Gly Gln Arg Gln Ala Val Glu Lys
 1               5                   10                  15

gaa cct tcc cac caa ggg tat ccg tgg aag cca atg acc aat ggc agc       96
Glu Pro Ser His Gln Gly Tyr Pro Trp Lys Pro Met Thr Asn Gly Ser
                20                  25                  30

tgc tca gaa ctg gca ttg ctc agc aaa acc cga atg tac tgt cac cag      144
Cys Ser Glu Leu Ala Leu Leu Ser Lys Thr Arg Met Tyr Cys His Gln
            35                  40                  45

gga tgt gtc agg cca ccc agg act gac gtg aaa aac ttc aag acc aca      192
Gly Cys Val Arg Pro Pro Arg Thr Asp Val Lys Asn Phe Lys Thr Thr
     50                  55                  60

act gat act cag agt gtg cct ggt gtc agt atg aag ctg aaa aag cag      240
Thr Asp Thr Gln Ser Val Pro Gly Val Ser Met Lys Leu Lys Lys Gln
 65                  70                  75                  80
```

```
gtg aca gtg tgc ggg gct gct atc ttc tgt gtg gcc gtc ttt tcc ctg    288
Val Thr Val Cys Gly Ala Ala Ile Phe Cys Val Ala Val Phe Ser Leu
             85                  90                  95

tac cta atg ctg gac cga gtg cag cat gat cct gcc aga cac cag aat    336
Tyr Leu Met Leu Asp Arg Val Gln His Asp Pro Ala Arg His Gln Asn
            100                 105                 110

ggt ggg aac ttc ccc agg agc caa att tct gtg cta cag aac cgg atc    384
Gly Gly Asn Phe Pro Arg Ser Gln Ile Ser Val Leu Gln Asn Arg Ile
            115             · 120                 125

gaa cag ctg gaa cag ctg ctg gaa gaa aac cat gag atc ata agc cat    432
Glu Gln Leu Glu Gln Leu Leu Glu Glu Asn His Glu Ile Ile Ser His
    130                 135                 140

atc aag gac tct gtg ctg gaa ctg aca gcc aat gcg gag ggc cca cca    480
Ile Lys Asp Ser Val Leu Glu Leu Thr Ala Asn Ala Glu Gly Pro Pro
145                 150                 155                 160

gcc ctg ctg ccc tac cac aca gcc aac ggc tcc tgg gct gtg ctc ccc    528
Ala Leu Leu Pro Tyr His Thr Ala Asn Gly Ser Trp Ala Val Leu Pro
                165                 170                 175

gag ccc cgg ccc agc ttc ttc tct gta tcc cct gag gac tgc cag ttt    576
Glu Pro Arg Pro Ser Phe Phe Ser Val Ser Pro Glu Asp Cys Gln Phe
            180                 185                 190

gct ttg ggg ggc cgg ggt cag aag cca gag cta cag atg tta act gtg    624
Ala Leu Gly Gly Arg Gly Gln Lys Pro Glu Leu Gln Met Leu Thr Val
            195                 200                 205

tct gag gat ttg ccg ttt gac aat gtg gag ggc ggc gtg tgg agg caa    672
Ser Glu Asp Leu Pro Phe Asp Asn Val Glu Gly Gly Val Trp Arg Gln
    210                 215                 220

ggc ttc gac atc tcc tac agc cca aat gac tgg gat gct gaa gac ctg    720
Gly Phe Asp Ile Ser Tyr Ser Pro Asn Asp Trp Asp Ala Glu Asp Leu
225                 230                 235                 240

cag gtg ttt gtg gtg cct cac tcc cac aat gat cca ggt gaa gag cca    768
Gln Val Phe Val Val Pro His Ser His Asn Asp Pro Gly Glu Glu Pro
                245                 250                 255

gca ggc ccc agc cgc agc gtg cag ggt ggg ctt tct ggt gac agg cgc    816
Ala Gly Pro Ser Arg Ser Val Gln Gly Gly Leu Ser Gly Asp Arg Arg
                260                 265                 270

tgg atc aag act ttt gac aag tac tac acg gaa caa acc caa cac atc    864
Trp Ile Lys Thr Phe Asp Lys Tyr Tyr Thr Glu Gln Thr Gln His Ile
    275                 280                 285
```

```
ctc aac agc atg gtg tcc aag ctg cag gaa gat ccc cga cgg cgc ttt    912
Leu Asn Ser Met Val Ser Lys Leu Gln Glu Asp Pro Arg Arg Arg Phe
    290             295             300

ctc tgg gca gaa gtc tcc ttc ttc gcc aag tgg tgg gac aac atc agt    960
Leu Trp Ala Glu Val Ser Phe Phe Ala Lys Trp Trp Asp Asn Ile Ser
305             310             315             320

gcc cag aaa agg gca gca gtt cga agg ctg gtg gga aat ggg cag ctg   1008
Ala Gln Lys Arg Ala Ala Val Arg Arg Leu Val Gly Asn Gly Gln Leu
            325             330             335

gaa att gca acg ggt gga tgg gtg atg cca gat gag gcc aac tcc cat   1056
Glu Ile Ala Thr Gly Gly Trp Val Met Pro Asp Glu Ala Asn Ser His
            340             345             350

tac ttt gcc ctg gtg ggg cag ctc atc gag ggg ccc ccc ccg gta cgc   1104
Tyr Phe Ala Leu Val Gly Gln Leu Ile Glu Gly Pro Pro Pro Val Arg
            355             360             365

agg gca gtg gac ccc ttt gga cac agc tcc acc atg cct tac ctg ctg   1152
Arg Ala Val Asp Pro Phe Gly His Ser Ser Thr Met Pro Tyr Leu Leu
    370             375             380

cgc cgt gcc aac ctg acc agc atg cta att cag agg gtg cat tac gcc   1200
Arg Arg Ala Asn Leu Thr Ser Met Leu Ile Gln Arg Val His Tyr Ala
385             390             395             400

atc aag aag cac ttt gcg gcc act cac agc ctg gag ttc atg tgg agg   1248
Ile Lys Lys His Phe Ala Ala Thr His Ser Leu Glu Phe Met Trp Arg
            405             410             415

cag aca tgg gat tca gac tcc agc aca gac atc ttc tgc cac atg atg   1296
Gln Thr Trp Asp Ser Asp Ser Ser Thr Asp Ile Phe Cys His Met Met
            420             425             430

ccc ttc tac agc tac gac gtc cca cac acc tgt ggc cct gat ccc aag   1344
Pro Phe Tyr Ser Tyr Asp Val Pro His Thr Cys Gly Pro Asp Pro Lys
            435             440             445

atc tgc tgc cag ttt gat ttc aaa cgt ctg ccg ggt ggg aga atc aat   1392
Ile Cys Cys Gln Phe Asp Phe Lys Arg Leu Pro Gly Gly Arg Ile Asn
    450             455             460

tgt cct tgg aag gtg ccg ccg cgg gct atc aca gag gcc aac gtg gca   1440
Cys Pro Trp Lys Val Pro Pro Arg Ala Ile Thr Glu Ala Asn Val Ala
465             470             475             480

gac agg gca gcc ctg ctc ctg gac cag tac cgg aag aag tcc cgg ctg   1488
Asp Arg Ala Ala Leu Leu Leu Asp Gln Tyr Arg Lys Lys Ser Arg Leu
            485             490             495
```

```
ttt cga agc agt gtc ctc ctt gtg ccg ctg ggt gat gac ttc cga tat      1536
Phe Arg Ser Ser Val Leu Leu Val Pro Leu Gly Asp Asp Phe Arg Tyr
            500                 505                 510

gac aag ccc cag gaa tgg gat gcc cag ttc ttc aac tat caa cgg ctc      1584
Asp Lys Pro Gln Glu Trp Asp Ala Gln Phe Phe Asn Tyr Gln Arg Leu
        515                 520                 525

ttt gac ttc ctc aac agc aag ccg gag ttc cac gta cag gca cag ttt      1632
Phe Asp Phe Leu Asn Ser Lys Pro Glu Phe His Val Gln Ala Gln Phe
    530                 535                 540

ggg acc ctc tct gag tat ttt gat gcc ctg tat aag agg aca gga gtg      1680
Gly Thr Leu Ser Glu Tyr Phe Asp Ala Leu Tyr Lys Arg Thr Gly Val
545                 550                 555                 560

gag cct ggt gcc cgg cct cca ggg ttt cct gtg ctg agt ggg gac ttc      1728
Glu Pro Gly Ala Arg Pro Pro Gly Phe Pro Val Leu Ser Gly Asp Phe
                565                 570                 575

ttc tcc tat gct gac cgg gag gac cac tac tgg aca ggc tat tac act      1776
Phe Ser Tyr Ala Asp Arg Glu Asp His Tyr Trp Thr Gly Tyr Tyr Thr
            580                 585                 590

tcc cgg cct ttc tat aag agc ttg gac cgc gtg cta gaa act cac ctt      1824
Ser Arg Pro Phe Tyr Lys Ser Leu Asp Arg Val Leu Glu Thr His Leu
        595                 600                 605

cgt ggg gca gag gtt cta tac agc ctg gct ttg gcg cat gcc cgc cgt      1872
Arg Gly Ala Glu Val Leu Tyr Ser Leu Ala Leu Ala His Ala Arg Arg
    610                 615                 620

tct gga ctg act ggc cag tat ccg ctg tct gat tac gct gtc ctg acg      1920
Ser Gly Leu Thr Gly Gln Tyr Pro Leu Ser Asp Tyr Ala Val Leu Thr
625                 630                 635                 640

gaa gct cgt cgt aca ctg ggc ctc ttc cag cac cac gat gcc atc acc      1968
Glu Ala Arg Arg Thr Leu Gly Leu Phe Gln His His Asp Ala Ile Thr
                645                 650                 655

gga act gcc aag gag gca gtt gta gta gac tat ggg gtc agg ttg ctg      2016
Gly Thr Ala Lys Glu Ala Val Val Val Asp Tyr Gly Val Arg Leu Leu
            660                 665                 670

cgt tcc ctg gtc agc cta aag cag gtc atc atc aat gct gcc cac tac      2064
Arg Ser Leu Val Ser Leu Lys Gln Val Ile Ile Asn Ala Ala His Tyr
        675                 680                 685

ctg gtg ctg ggg gac aag gag acc tac agc ttt gac cct agg gca ccc      2112
Leu Val Leu Gly Asp Lys Glu Thr Tyr Ser Phe Asp Pro Arg Ala Pro
        690                 695                 700
```

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ttc ctc caa atg gtg agc cag gcc tgg cga ggc tct cag agc acc ctc    2160
Phe Leu Gln Met Val Ser Gln Ala Trp Arg Gly Ser Gln Ser Thr Leu
705             710             715             720

cac ccc agc gcg gcc ctt gtt cct gct gct gct gct tct gcc ctg ctg    2208
His Pro Ser Ala Ala Leu Val Pro Ala Ala Ala Ala Ser Ala Leu Leu
                725             730             735

ccg cag cga gct cct agg ttt gtg gtg gtc ttt aac cca ctg gaa cag    2256
Pro Gln Arg Ala Pro Arg Phe Val Val Val Phe Asn Pro Leu Glu Gln
                740             745             750

gag cgg ctc agt gtg gtg tcc ctg ctg gtc aac tca ccc cga gtg cga    2304
Glu Arg Leu Ser Val Val Ser Leu Leu Val Asn Ser Pro Arg Val Arg
            755             760             765

gtg ctt tca gag gag ggt cag ccc ttg tct gtg cag atc agt gtg cag    2352
Val Leu Ser Glu Glu Gly Gln Pro Leu Ser Val Gln Ile Ser Val Gln
        770             775             780

tgg agc tcc gcc acc aac atg gtc ccc gat gtc tac cag gtg tca gtg    2400
Trp Ser Ser Ala Thr Asn Met Val Pro Asp Val Tyr Gln Val Ser Val
785             790             795             800

cct gtc cgc ctg cca gcc ctg ggc ctg ggt gtg ctg cag ctg cag cca    2448
Pro Val Arg Leu Pro Ala Leu Gly Leu Gly Val Leu Gln Leu Gln Pro
                805             810             815

gat ctc gat gga ccc tac aca ctg cag tct tcg gtg cat gtc tac ctg    2496
Asp Leu Asp Gly Pro Tyr Thr Leu Gln Ser Ser Val His Val Tyr Leu
                820             825             830

aac ggc gtg aaa ctg tct gtc agc agg caa aca aca ttc cct ctc cgt    2544
Asn Gly Val Lys Leu Ser Val Ser Arg Gln Thr Thr Phe Pro Leu Arg
            835             840             845

gtt gtg gac tcg ggc acc agt gac ttc gcc atc agc aat cga tac atg    2592
Val Val Asp Ser Gly Thr Ser Asp Phe Ala Ile Ser Asn Arg Tyr Met
        850             855             860

cag gtc tgg ttc tcc ggc ctt act ggg ctt ctc aag agc gtc cga cgt    2640
Gln Val Trp Phe Ser Gly Leu Thr Gly Leu Leu Lys Ser Val Arg Arg
865             870             875             880

gtg gac gaa gag cag gaa cag cag gtg gac atg aag ctc ttc gtc tat    2688
Val Asp Glu Glu Gln Glu Gln Gln Val Asp Met Lys Leu Phe Val Tyr
                885             890             895

gga acc cgc aca tcc aag gat aag agt ggt gcc tac ctc ttc ctg cct    2736
Gly Thr Arg Thr Ser Lys Asp Lys Ser Gly Ala Tyr Leu Phe Leu Pro
        900             905             910
```

```
gat aac gag gct aag ccc tat gtc cct aag aaa cct cct gtg ctg cgc    2784
Asp Asn Glu Ala Lys Pro Tyr Val Pro Lys Lys Pro Pro Val Leu Arg
        915             920             925
```

```
gtc acc gaa ggc cct ttc ttc tca gag gtg gct gcg tat tat gag cac    2832
Val Thr Glu Gly Pro Phe Phe Ser Glu Val Ala Ala Tyr Tyr Glu His
        930             935             940
```

```
ttt cac caa gtg att cga ctt tac aac ctg cca ggg gta gag ggg ctg    2880
Phe His Gln Val Ile Arg Leu Tyr Asn Leu Pro Gly Val Glu Gly Leu
945             950             955             960
```

```
tct ctg gac gtg tcg ttc cag gtg gac atc agg gac tac gtg aac aag    2928
Ser Leu Asp Val Ser Phe Gln Val Asp Ile Arg Asp Tyr Val Asn Lys
                965             970             975
```

```
gag cta gcc ctg cgc atc cac aca gac atc gac agc cag ggc act ttc    2976
Glu Leu Ala Leu Arg Ile His Thr Asp Ile Asp Ser Gln Gly Thr Phe
                980             985             990
```

```
ttc aca gac ctc aat ggc ttt cag gta cag ccc cgg aag tat ctg aag    3024
Phe Thr Asp Leu Asn Gly Phe Gln Val Gln Pro Arg Lys Tyr Leu Lys
        995             1000            1005
```

```
aag ttg ccc ctg cag gct aat ttc tac cct atg cca gtc atg gcc tac    3072
Lys Leu Pro Leu Gln Ala Asn Phe Tyr Pro Met Pro Val Met Ala Tyr
    1010            1015            1020
```

```
atc cag gat tcc cag agg cgc ctc acg ctg cac act gct cag gct ctg    3120
Ile Gln Asp Ser Gln Arg Arg Leu Thr Leu His Thr Ala Gln Ala Leu
1025            1030            1035            1040
```

```
ggt gtc tcc agc ctc ggc aat ggc cag ctg gag gtg atc ttg gac cga    3168
Gly Val Ser Ser Leu Gly Asn Gly Gln Leu Glu Val Ile Leu Asp Arg
                1045            1050            1055
```

```
agg cta atg cag gat gac aac cgg gga cta ggc caa ggg ctc aaa gac    3216
Arg Leu Met Gln Asp Asp Asn Arg Gly Leu Gly Gln Gly Leu Lys Asp
            1060            1065            1070
```

```
aac aag atc acc tgc aac cat ttc cgc ctc ctg tta gaa cgt cga acc    3264
Asn Lys Ile Thr Cys Asn His Phe Arg Leu Leu Leu Glu Arg Arg Thr
        1075            1080            1085
```

```
ctg atg agc cct gag gtc caa cag gag cgc tct aca agc tac ccg tcc    3312
Leu Met Ser Pro Glu Val Gln Gln Glu Arg Ser Thr Ser Tyr Pro Ser
    1090            1095            1100
```

```
ctc ctc agc cac atg act tcc atg tac ctc aac aca cct cct ctg gtc    3360
Leu Leu Ser His Met Thr Ser Met Tyr Leu Asn Thr Pro Pro Leu Val
1105            1110            1115            1120
```

```
tta ccg gtg gcc aag agg gag agc acc agc ccc act ctg cac tct ttc      3408
Leu Pro Val Ala Lys Arg Glu Ser Thr Ser Pro Thr Leu His Ser Phe
            1125                1130                1135

cac cct ctg gct tct ccg ttg ccc tgc gat ttc cat ctg ctc aat ctg      3456
His Pro Leu Ala Ser Pro Leu Pro Cys Asp Phe His Leu Leu Asn Leu
        1140                1145                1150

cgc atg ctc ccc gcc gag gtg agt gtc ccg gtc cgt gcc aat cct cac      3504
Arg Met Leu Pro Ala Glu Val Ser Val Pro Val Arg Ala Asn Pro His
        1155                1160                1165

cat cag gct gag cct tgc ctt ctt ggc aga cat gct gct gac cct cca      3552
His Gln Ala Glu Pro Cys Leu Leu Gly Arg His Ala Ala Asp Pro Pro
    1170                1175                1180

ccg ctc ttg tcc ctg act gtc ttc cag gac acc ttg ccc gcg gct gat      3600
Pro Leu Leu Ser Leu Thr Val Phe Gln Asp Thr Leu Pro Ala Ala Asp
1185                1190                1195                1200

gct gct ctc atc cta cac cgc aag ggt ttt gac tgt ggc ctt gaa gcc      3648
Ala Ala Leu Ile Leu His Arg Lys Gly Phe Asp Cys Gly Leu Glu Ala
            1205                1210                1215

aag aac ctg ggc ttc aac tgt acc aca agc caa ggc aag ctg gcc ctg      3696
Lys Asn Leu Gly Phe Asn Cys Thr Thr Ser Gln Gly Lys Leu Ala Leu
            1220                1225                1230

ggg agc ctc ttc cat ggc ctg gat gtg cta ttc ctg cag ccc acc tct      3744
Gly Ser Leu Phe His Gly Leu Asp Val Leu Phe Leu Gln Pro Thr Ser
            1235                1240                1245

ttg act ttg cta tac cct ctg gcc tcg ccc tcc aac agc act gac atc      3792
Leu Thr Leu Leu Tyr Pro Leu Ala Ser Pro Ser Asn Ser Thr Asp Ile
    1250                1255                1260

tct ctg gag ccc atg gag atc agc acc ttc cgc ctg cgc ttg ggt tag      3840
Ser Leu Glu Pro Met Glu Ile Ser Thr Phe Arg Leu Arg Leu Gly
1265                1270                1275
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<211> 3420
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<213> Homo sapiens

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<221> CDS
<222> (1)..(3417)

<400> 56

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Met Lys Leu Lys Lys Gln Val Thr Val Cys Gly Ala Ala Ile Phe Cys
 1               5                  10                  15

gtg gca gtc ttc tcg ctc tac ctc atg ctg gac cga gtg caa cac gat    96
Val Ala Val Phe Ser Leu Tyr Leu Met Leu Asp Arg Val Gln His Asp
                20                  25                  30

ccc acc cga cac cag aat ggt ggg aac ttc ccc cgg agc caa att tct   144
Pro Thr Arg His Gln Asn Gly Gly Asn Phe Pro Arg Ser Gln Ile Ser
            35                  40                  45

gtg ctg cag aac cgc att gag cag ctg gag cag ctt ttg gag gag aac   192
Val Leu Gln Asn Arg Ile Glu Gln Leu Glu Gln Leu Leu Glu Glu Asn
    50                  55                  60

cat gag att atc agc cat atc aag gac tcc gtg ctg gag ctg aca gcc   240
His Glu Ile Ile Ser His Ile Lys Asp Ser Val Leu Glu Leu Thr Ala
65                  70                  75    ,              80

aac gca gag ggc ccg ccc gcc atg ctg ccc tac tac acg gtc aat ggc   288
Asn Ala Glu Gly Pro Pro Ala Met Leu Pro Tyr Tyr Thr Val Asn Gly
                85                  90                  95

tcc tgg gtg gtg cca ccg gag ccc cgg ccc agc ttc ttc tcc atc tcc   336
Ser Trp Val Val Pro Pro Glu Pro Arg Pro Ser Phe Phe Ser Ile Ser
               100                 105                 110

ccg cag gac tgc cag ttt gct ttg ggg ggc cgg ggt cag aag cca gag   384
Pro Gln Asp Cys Gln Phe Ala Leu Gly Gly Arg Gly Gln Lys Pro Glu
           115                 120                 125

ctg cag atg ctc act gtg tcg gag gag ctg ccg ttt gac aac gtg gat   432
Leu Gln Met Leu Thr Val Ser Glu Glu Leu Pro Phe Asp Asn Val Asp
           130                 135                 140

ggt ggt gtg tgg agg caa ggc ttc gac atc tcc tac gac ccg cac gac   480
Gly Gly Val Trp Arg Gln Gly Phe Asp Ile Ser Tyr Asp Pro His Asp
145                 150                 155                 160

tgg gat gct gaa gac ctg cag gtg ttt gtg gtg ccc cac tct cac aat   528
Trp Asp Ala Glu Asp Leu Gln Val Phe Val Val Pro His Ser His Asn
               165                 170                 175

gac cca ggc tgg atc aag acc ttt gac aag tac tac aca gag cag acc   576
Asp Pro Gly Trp Ile Lys Thr Phe Asp Lys Tyr Tyr Thr Glu Gln Thr
           180                 185                 190

caa cac atc ctc aat agc atg gtg tct aag ctg cag gag gac ccc cgg   624
Gln His Ile Leu Asn Ser Met Val Ser Lys Leu Gln Glu Asp Pro Arg
           195                 200                 205
```

```
cgg cgc ttc ctc tgg gca gag gtc tcc ttc ttc gcc aag tgg tgg gac    672
Arg Arg Phe Leu Trp Ala Glu Val Ser Phe Phe Ala Lys Trp Trp Asp
    210                 215                 220

aac atc aat gtc caa aag aga gcg gca gtc cga agg ctg gtg gga aac    720
Asn Ile Asn Val Gln Lys Arg Ala Ala Val Arg Arg Leu Val Gly Asn
225                 230                 235                 240

ggg cag ctg gag att gcg aca gga ggc tgg gtg atg cca gat gag gcc    768
Gly Gln Leu Glu Ile Ala Thr Gly Gly Trp Val Met Pro Asp Glu Ala
                245                 250                 255

aat tcc cac tac ttt gca ttg att gac cag ctc atc gaa gga cac cag    816
Asn Ser His Tyr Phe Ala Leu Ile Asp Gln Leu Ile Glu Gly His Gln
                260                 265                 270

tgg ctg gag aga aat ctt ggt gca acc ccc cgc tct ggc tgg gca gtg    864
Trp Leu Glu Arg Asn Leu Gly Ala Thr Pro Arg Ser Gly Trp Ala Val
                275                 280                 285

gac ccc ttt gga tac agc tcc acc atg cct tac ctg ctg cgc cgt gcc    912
Asp Pro Phe Gly Tyr Ser Ser Thr Met Pro Tyr Leu Leu Arg Arg Ala
            290                 295                 300

aac ctc acc agc atg ctg att cag aga gtg cac tat gcc atc aag aag    960
Asn Leu Thr Ser Met Leu Ile Gln Arg Val His Tyr Ala Ile Lys Lys
305                 310                 315                 320

cac ttt gct gcc acc cac agc cta gag ttc atg tgg agg cag aca tgg   1008
His Phe Ala Ala Thr His Ser Leu Glu Phe Met Trp Arg Gln Thr Trp
                325                 330                 335

gac tcg gac tcc agc aca gac atc ttc tgt cac atg atg ccc ttc tac   1056
Asp Ser Asp Ser Ser Thr Asp Ile Phe Cys His Met Met Pro Phe Tyr
                340                 345                 350

agc tat gac gtc ccc cat acc tgt ggc cca gat ccc aag atc tgc tgc   1104
Ser Tyr Asp Val Pro His Thr Cys Gly Pro Asp Pro Lys Ile Cys Cys
                355                 360                 365

caa ttt gat ttc aaa cgc ctg cct ggt ggg cgc atc aac tgc cct tgg   1152
Gln Phe Asp Phe Lys Arg Leu Pro Gly Gly Arg Ile Asn Cys Pro Trp
                370                 375                 380

aag gtg cca ccc cgg gcc atc aca gag gcc aac gtg gca gag agg gca   1200
Lys Val Pro Pro Arg Ala Ile Thr Glu Ala Asn Val Ala Glu Arg Ala
385                 390                 395                 400

gcc ctg ctt ctg gac caa tac cgg aag aag tcc cag ctg ttc cga agc   1248
Ala Leu Leu Leu Asp Gln Tyr Arg Lys Lys Ser Gln Leu Phe Arg Ser
                405                 410                 415
```

```
aac gtc ctc ctg gtg cct ctt gga gat gac ttc cga tat gac aag ccc    1296
Asn Val Leu Leu Val Pro Leu Gly Asp Asp Phe Arg Tyr Asp Lys Pro
            420                 425                 430

cag gag tgg gat gcc cag ttc ttc aac tac caa cgg ctc ttt gac ttc    1344
Gln Glu Trp Asp Ala Gln Phe Phe Asn Tyr Gln Arg Leu Phe Asp Phe
            435                 440                 445

ttc aac agc agg cct aac ctc cat gtg cag gcc cag ttt ggc act ctt    1392
Phe Asn Ser Arg Pro Asn Leu His Val Gln Ala Gln Phe Gly Thr Leu
            450                 455                 460

tct gac tat ttt gat gcc ctg tac aag agg aca ggg gtg gag cca ggg    1440
Ser Asp Tyr Phe Asp Ala Leu Tyr Lys Arg Thr Gly Val Glu Pro Gly
465                 470                 475                 480

gcc cgg cct cca ggg ttt cct gtg ctg agc ggg gat ttc ttc tcc tat    1488
Ala Arg Pro Pro Gly Phe Pro Val Leu Ser Gly Asp Phe Phe Ser Tyr
                485                 490                 495

gcg gac cgg gag gat cat tac tgg aca ggc tat tac act tcc cgg ccc    1536
Ala Asp Arg Glu Asp His Tyr Trp Thr Gly Tyr Tyr Thr Ser Arg Pro
            500                 505                 510

ttc tac aag agc tta gac cga gtc ctg gaa gcc cac ctg cgg ggg gca    1584
Phe Tyr Lys Ser Leu Asp Arg Val Leu Glu Ala His Leu Arg Gly Ala
            515                 520                 525

gag gtt ctg tac agc ctg gct gca gct cac gct cgc cgc tct ggt ctg    1632
Glu Val Leu Tyr Ser Leu Ala Ala Ala His Ala Arg Arg Ser Gly Leu
            530                 535                 540

gct ggc cgg tac cca ctg tct gat ttc acc ctc ctg acg gaa gct cgg    1680
Ala Gly Arg Tyr Pro Leu Ser Asp Phe Thr Leu Leu Thr Glu Ala Arg
545                 550                 555                 560

cgc aca ttg ggg ctc ttc cag cat cac gat gcc atc act ggc acg gcc    1728
Arg Thr Leu Gly Leu Phe Gln His His Asp Ala Ile Thr Gly Thr Ala
                565                 570                 575

aag gag gct gtg gtg gtg gac tat ggg gtc agg ctt ctg cgc tcc ctt    1776
Lys Glu Ala Val Val Val Asp Tyr Gly Val Arg Leu Leu Arg Ser Leu
            580                 585                 590

gtc aac ctg aag cag gtc atc att cat gca gcc cac tat ctg gtg ctg    1824
Val Asn Leu Lys Gln Val Ile Ile His Ala Ala His Tyr Leu Val Leu
            595                 600                 605

ggg gac aag gag acc tac cac ttt gac cct gag gcg ccc ttc ctc caa    1872
Gly Asp Lys Glu Thr Tyr His Phe Asp Pro Glu Ala Pro Phe Leu Gln
            610                 615                 620
```

```
gtg gat gac act cgc tta agt cac gac gcc ctc cca gag cgc acg gtg       1920
Val Asp Asp Thr Arg Leu Ser His Asp Ala Leu Pro Glu Arg Thr Val
625             630             635             640

atc cag ctg gat tcc tcg ccc agg ttt gtg gtc cta ttc aac cca ctg       1968
Ile Gln Leu Asp Ser Ser Pro Arg Phe Val Val Leu Phe Asn Pro Leu
            645             650             655

gaa cag gag cga ttc agc atg gtg tcc ctg ctg gtc aac tct ccc cgc       2016
Glu Gln Glu Arg Phe Ser Met Val Ser Leu Leu Val Asn Ser Pro Arg
            660             665             670

gtg cgt gtc ctt tcg gag gag ggt cag ccc ctg gcc gtg cag atc agc       2064
Val Arg Val Leu Ser Glu Glu Gly Gln Pro Leu Ala Val Gln Ile Ser
            675             680             685

gca cac tgg agc tct gcc acc gag gcg gtc cct gac gtc tac cag gtg       2112
Ala His Trp Ser Ser Ala Thr Glu Ala Val Pro Asp Val Tyr Gln Val
    690             695             700

tct gtg cct gtc cgc ctg cca gcc ctg ggc ctg ggc gtg ctg cag cta       2160
Ser Val Pro Val Arg Leu Pro Ala Leu Gly Leu Gly Val Leu Gln Leu
705             710             715             720

cag ctg ggc ctg gat ggg cac cgc acg ctg ccc tcc tct gtg cgc atc       2208
Gln Leu Gly Leu Asp Gly His Arg Thr Leu Pro Ser Ser Val Arg Ile
            725             730             735

tac ctg cac ggc cgg cag ctg tcc gtc agc agg cac gaa gcg ttt cct       2256
Tyr Leu His Gly Arg Gln Leu Ser Val Ser Arg His Glu Ala Phe Pro
            740             745             750

ctc cgt gtc att gac tct ggc acc agc gac ttc gcc ctc agc aac cgc       2304
Leu Arg Val Ile Asp Ser Gly Thr Ser Asp Phe Ala Leu Ser Asn Arg
            755             760             765

tac atg cag gtc tgg ttc tca ggc ctt act ggg ctc ctc aag agc atc       2352
Tyr Met Gln Val Trp Phe Ser Gly Leu Thr Gly Leu Leu Lys Ser Ile
    770             775             780

cga agg gtg gat gag gag cac gag cag cag gtg gac atg cag gtc ctt       2400
Arg Arg Val Asp Glu Glu His Glu Gln Gln Val Asp Met Gln Val Leu
785             790             795             800

gtc tat ggc acc cgt acg tcc aaa gac aag agt gga gcc tac ctc ttc       2448
Val Tyr Gly Thr Arg Thr Ser Lys Asp Lys Ser Gly Ala Tyr Leu Phe
            805             810             815

ctg ccc gat ggc gag gct agc cct acg tcc cca agg agc ccc ccg tgc       2496
Leu Pro Asp Gly Glu Ala Ser Pro Thr Ser Pro Arg Ser Pro Pro Cys
            820             825             830
```

```
tgc gtg tca ctg aag gcc ctt tct tct cag agg tgg ttg cgt act atg        2544
Cys Val Ser Leu Lys Ala Leu Ser Ser Gln Arg Trp Leu Arg Thr Met
        835                     840                     845

agc aca ttc acc agg cgg tcc ggc ttt aca atc tgc cag ggg tgg agg        2592
Ser Thr Phe Thr Arg Arg Ser Gly Phe Thr Ile Cys Gln Gly Trp Arg
        850                     855                     860

ggc tgt ctc tgg aca tat cat ccc tgg tgg aca tcc ggg act acg tca        2640
Gly Cys Leu Trp Thr Tyr His Pro Trp Trp Thr Ser Gly Thr Thr Ser
865                     870                     875                     880

aca agg agc tgg ccc tgc aca tcc ata cag aca tcg aca gcc agg gtg        2688
Thr Arg Ser Trp Pro Cys Thr Ser Ile Gln Thr Ser Thr Ala Arg Val
                885                     890                     895

cag ccc cga cgg tat ctg aag aag ctc ccc ctc cag gcc aac ttc tac        2736
Gln Pro Arg Arg Tyr Leu Lys Lys Leu Pro Leu Gln Ala Asn Phe Tyr
                900                     905                     910

ccc atg cca gtc atg gcc tat atc cag gac gca cag aag cgc ctc acg        2784
Pro Met Pro Val Met Ala Tyr Ile Gln Asp Ala Gln Lys Arg Leu Thr
                915                     920                     925

ctg cac act gcc cag gcc ctg ggt gtc tct agc ctc aaa gat ggc cag        2832
Leu His Thr Ala Gln Ala Leu Gly Val Ser Ser Leu Lys Asp Gly Gln
        930                     935                     940

ctg gag gtg atc ttg gac cgg cgg ctg atg cag gat gac aac cgg ggc        2880
Leu Glu Val Ile Leu Asp Arg Arg Leu Met Gln Asp Asp Asn Arg Gly
945                     950                     955                     960

cta ggc caa ggg ctc aag gac aac aag aga acc tgc aac cgt ttc cgc        2928
Leu Gly Gln Gly Leu Lys Asp Asn Lys Arg Thr Cys Asn Arg Phe Arg
                965                     970                     975

ctc ctg cta gag cgg cga acc gtg ggc agt gag gtc caa gat agc cac        2976
Leu Leu Leu Glu Arg Arg Thr Val Gly Ser Glu Val Gln Asp Ser His
                980                     985                     990

tct acc agc tac cca tcc ctc ctc agc cac ctg acc tcc atg tac ctg        3024
Ser Thr Ser Tyr Pro Ser Leu Leu Ser His Leu Thr Ser Met Tyr Leu
                995                     1000                    1005

aac gcc ccg gcg ctc gct ctg cct gta gcc agg atg cag ctc cca ggc        3072
Asn Ala Pro Ala Leu Ala Leu Pro Val Ala Arg Met Gln Leu Pro Gly
        1010                    1015                    1020

cct ggt ctg cgc tca ttt cat cct ctg gct tcc tca ctg ccc tgt gac        3120
Pro Gly Leu Arg Ser Phe His Pro Leu Ala Ser Ser Leu Pro Cys Asp
1025                    1030                    1035                    1040
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```
ttc cac ctg ctc aac cta cgt acg ctc cag gct gag gag gac acc cta    3168
Phe His Leu Leu Asn Leu Arg Thr Leu Gln Ala Glu Glu Asp Thr Leu
                1045                    1050                1055

ccc tcg gcg gag acc gca ctc atc tta cac cgc aag ggt ttt gac tgc    3216
Pro Ser Ala Glu Thr Ala Leu Ile Leu His Arg Lys Gly Phe Asp Cys
                1060                    1065                1070

ggc ctg gag gcc aag aac ttg ggc ttc aac tgc acc aca agc caa ggc    3264
Gly Leu Glu Ala Lys Asn Leu Gly Phe Asn Cys Thr Thr Ser Gln Gly
            1075                    1080                1085

aag gta gcc ctg ggc agc ctt ttc cat ggc ctg gat gtg gta ttc ctt    3312
Lys Val Ala Leu Gly Ser Leu Phe His Gly Leu Asp Val Val Phe Leu
        1090                    1095                1100

cag cca acc tcc ttg acg tta ctg tac cct ctg gcc tcc ccg tcc aac    3360
Gln Pro Thr Ser Leu Thr Leu Leu Tyr Pro Leu Ala Ser Pro Ser Asn
1105                    1110                    1115                1120

agc act gac gtc tat ttg gag ccc atg gag att gct acc ttt cgc ctc    3408
Ser Thr Asp Val Tyr Leu Glu Pro Met Glu Ile Ala Thr Phe Arg Leu
                1125                    1130                1135

cgc ttg ggt tag                                                    3420
Arg Leu Gly
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Met Arg Thr Arg Val Leu Arg Cys Arg Pro Phe Ser Thr Arg Ile Leu
  1               5                   10                  15

ctg ctg ctg cta ttt gtc ctt gcg ttt ggg gtc tac tgc tat ttc tac    96
Leu Leu Leu Leu Phe Val Leu Ala Phe Gly Val Tyr Cys Tyr Phe Tyr
                20                  25                  30

aat gca tct cct cag aac tat aac aaa cca aga atc agt tac cca gcc    144
Asn Ala Ser Pro Gln Asn Tyr Asn Lys Pro Arg Ile Ser Tyr Pro Ala
            35                  40                  45

agt atg gag cac ttc aaa tct tcc ctc act cac acc gtc aag agc cga    192
Ser Met Glu His Phe Lys Ser Ser Leu Thr His Thr Val Lys Ser Arg
        50                  55                  60
```

```
gac gag cca act ccg gat caa tgc cct gca ttg aag gaa agc gaa gcg    240
Asp Glu Pro Thr Pro Asp Gln Cys Pro Ala Leu Lys Glu Ser Glu Ala
 65                      70              75                  80

gac atc gac acc gtg gcg ata tac cca act ttt gat ttt cag ccg agc    288
Asp Ile Asp Thr Val Ala Ile Tyr Pro Thr Phe Asp Phe Gln Pro Ser
                     85              90              95

tgg ttg cgt aca aag gaa ttt tgg gac aag tcc ttc gag gat cgg tat    336
Trp Leu Arg Thr Lys Glu Phe Trp Asp Lys Ser Phe Glu Asp Arg Tyr
                100             105             110

gaa aga att cat aac gac act aca cgg cct aga ctg aag gta atc gtg    384
Glu Arg Ile His Asn Asp Thr Thr Arg Pro Arg Leu Lys Val Ile Val
                115             120             125

gtt cct cac tca cac aac gac ccg gga tgg ctg aag acg ttt gaa cag    432
Val Pro His Ser His Asn Asp Pro Gly Trp Leu Lys Thr Phe Glu Gln
    130             135             140

tac ttc gag tgg aag acc aag aac att atc aac aac ata gtg aac aaa    480
Tyr Phe Glu Trp Lys Thr Lys Asn Ile Ile Asn Asn Ile Val Asn Lys
145             150             155             160

ctg cac cag tac ccc aac atg acc ttc att tgg acc gag ata tcg ttt    528
Leu His Gln Tyr Pro Asn Met Thr Phe Ile Trp Thr Glu Ile Ser Phe
                165             170             175

ctg aat gcc tgg tgg gaa agg tcg cac cct gtc aaa caa aag gca ttg    576
Leu Asn Ala Trp Trp Glu Arg Ser His Pro Val Lys Gln Lys Ala Leu
                180             185             190

aaa aaa ctt atc aaa gaa ggt cgt ctc gag atc acg acg ggc ggc tgg    624
Lys Lys Leu Ile Lys Glu Gly Arg Leu Glu Ile Thr Thr Gly Gly Trp
                195             200             205

gtg atg ccg gac gaa gcc tgc acg cat atc tat gcg cta att gac cag    672
Val Met Pro Asp Glu Ala Cys Thr His Ile Tyr Ala Leu Ile Asp Gln
    210             215             220

ttt att gaa gga cat cac tgg gtg aaa act aat ctc ggc gtc atc ccg    720
Phe Ile Glu Gly His His Trp Val Lys Thr Asn Leu Gly Val Ile Pro
225             230             235             240

aag aca gga tgg tct att gac ccc ttc ggc cac ggg gcc act gtg cct    768
Lys Thr Gly Trp Ser Ile Asp Pro Phe Gly His Gly Ala Thr Val Pro
                245             250             255

tac ctg cta gac cag agc ggc ctt gag gga acc att ata cag aga atc    816
Tyr Leu Leu Asp Gln Ser Gly Leu Glu Gly Thr Ile Ile Gln Arg Ile
                260             265             270
```

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cat tat gcg tgg aaa cag tgg ctg gcg gag cga cag att gag gag ttt    864
His Tyr Ala Trp Lys Gln Trp Leu Ala Glu Arg Gln Ile Glu Glu Phe
        275                 280                 285

tac tgg ctg gcg agt tgg gct act acg aag ccg tcc atg ata gtg cac    912
Tyr Trp Leu Ala Ser Trp Ala Thr Thr Lys Pro Ser Met Ile Val His
        290                 295                 300

aat cag ccg ttt gat att tat tca ata aaa agc acg tgt ggc ccg cac    960
Asn Gln Pro Phe Asp Ile Tyr Ser Ile Lys Ser Thr Cys Gly Pro His
305                 310                 315                 320

cct tca att tgt ctc agt ttc gac ttc agg aag att ccc ggc gaa tat   1008
Pro Ser Ile Cys Leu Ser Phe Asp Phe Arg Lys Ile Pro Gly Glu Tyr
                325                 330                 335

tct gaa tac aca gct aag cac gaa gac atc acg gaa cac aac ttg cac   1056
Ser Glu Tyr Thr Ala Lys His Glu Asp Ile Thr Glu His Asn Leu His
                340                 345                 350

agc aag gca aag act ttg ata gag gag tac gac cgt atc ggg tcc ctg   1104
Ser Lys Ala Lys Thr Leu Ile Glu Glu Tyr Asp Arg Ile Gly Ser Leu
                355                 360                 365

act cca cac aac gtg gtg ctg gtg ccg ctc gga gac gac ttc aga tac   1152
Thr Pro His Asn Val Val Leu Val Pro Leu Gly Asp Asp Phe Arg Tyr
        370                 375                 380

gag tac agc gtc gag ttt gat gcc caa tac gtc aat tat atg aaa atg   1200
Glu Tyr Ser Val Glu Phe Asp Ala Gln Tyr Val Asn Tyr Met Lys Met
385                 390                 395                 400

ttt aac tac atc aat gct cac aag gaa atc ttc aac gct gac gta cag   1248
Phe Asn Tyr Ile Asn Ala His Lys Glu Ile Phe Asn Ala Asp Val Gln
                405                 410                 415

ttc gga act cct ctc gat tac ttt aac gcc atg aaa gaa aga cat caa   1296
Phe Gly Thr Pro Leu Asp Tyr Phe Asn Ala Met Lys Glu Arg His Gln
                420                 425                 430

aat ata ccc agc tta aag gga gat ttc ttc gtt tac tcc gat att ttc   1344
Asn Ile Pro Ser Leu Lys Gly Asp Phe Phe Val Tyr Ser Asp Ile Phe
        435                 440                 445

agc gaa ggt aaa cca gcg tac tgg tca ggt tac tac act act aga ccc   1392
Ser Glu Gly Lys Pro Ala Tyr Trp Ser Gly Tyr Tyr Thr Thr Arg Pro
        450                 455                 460

tac caa aaa atc ctc gcc cgt cag ttc gaa cac caa ctg cga tcg gca   1440
Tyr Gln Lys Ile Leu Ala Arg Gln Phe Glu His Gln Leu Arg Ser Ala
465                 470                 475                 480
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gag att tta ttc acc ctt gta tcg aac tac atc aga cag atg ggt cgc      1488
Glu Ile Leu Phe Thr Leu Val Ser Asn Tyr Ile Arg Gln Met Gly Arg
                485             490                 495


caa gga gag ttc gga gct tct gag aaa aag tta gaa aaa tct tac gag      1536
Gln Gly Glu Phe Gly Ala Ser Glu Lys Lys Leu Glu Lys Ser Tyr Glu
            500                 505                 510


cag ctt atc tat gct cga cgg aac ttg ggt ctg ttt caa cat cac gat      1584
Gln Leu Ile Tyr Ala Arg Arg Asn Leu Gly Leu Phe Gln His His Asp
            515                 520                 525


gcg att act gga aca tca aag tcc agt gtg atg caa gat tac gga acc      1632
Ala Ile Thr Gly Thr Ser Lys Ser Ser Val Met Gln Asp Tyr Gly Thr
        530                 535                 540


aaa ctg ttc aca agt ctg tat cac tgc atc cgc ctg cag gag gcc gcg      1680
Lys Leu Phe Thr Ser Leu Tyr His Cys Ile Arg Leu Gln Glu Ala Ala
545                 550                 555                 560


ctc acc acc atc atg ttg cct gac cag tcg ttg cac tcg cag agc att      1728
Leu Thr Thr Ile Met Leu Pro Asp Gln Ser Leu His Ser Gln Ser Ile
                565                 570                 575


ata caa agc gag gtt gag tgg gaa act tac gga aaa ccg ccc aag aag      1776
Ile Gln Ser Glu Val Glu Trp Glu Thr Tyr Gly Lys Pro Pro Lys Lys
            580                 585                 590


ctg caa gtg tcc ttc att gac aag aag aaa gtt ata ctt ttt aat ccg      1824
Leu Gln Val Ser Phe Ile Asp Lys Lys Lys Val Ile Leu Phe Asn Pro
            595                 600                 605


ttg gct gag act cga act gaa gtg gtc acg gtt aga tcc aac acg tcc      1872
Leu Ala Glu Thr Arg Thr Glu Val Val Thr Val Arg Ser Asn Thr Ser
        610                 615                 620


aac atc cgg gtg tac gat aca cac aag agg aag cac gtc ttg tat cag      1920
Asn Ile Arg Val Tyr Asp Thr His Lys Arg Lys His Val Leu Tyr Gln
625                 630                 635                 640


ata atg ccc agc atc aca atc caa gac aac ggc aag agt atc gta agc      1968
Ile Met Pro Ser Ile Thr Ile Gln Asp Asn Gly Lys Ser Ile Val Ser
                645                 650                 655


gac acc acg ttc gac ata atg ttc gtg gcc acc atc ccg ccc ctc acc      2016
Asp Thr Thr Phe Asp Ile Met Phe Val Ala Thr Ile Pro Pro Leu Thr
                660                 665                 670


tcc atc tcg tac aag ctg cag gag cac acc aac act tcc cac cac tgc      2064
Ser Ile Ser Tyr Lys Leu Gln Glu His Thr Asn Thr Ser His His Cys
            675                 680                 685
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gtc att ttc tgc aac aac tgc gaa caa tac cag aaa tcc aat gtg ttc    2112
Val Ile Phe Cys Asn Asn Cys Glu Gln Tyr Gln Lys Ser Asn Val Phe
    690             695             700

caa att aag aaa atg atg cct ggt gac ata caa tta gaa aat gca gtg    2160
Gln Ile Lys Lys Met Met Pro Gly Asp Ile Gln Leu Glu Asn Ala Val
705             710             715             720

cta aaa ctt ctc gtt aat agg aac acc ggc ttt ctg aga caa gtc tat    2208
Leu Lys Leu Leu Val Asn Arg Asn Thr Gly Phe Leu Arg Gln Val Tyr
            725             730             735

aga aag gac atc cgg aag aga act gtc gtt gac gta caa ttc ggc gca    2256
Arg Lys Asp Ile Arg Lys Arg Thr Val Val Asp Val Gln Phe Gly Ala
            740             745             750

tat caa agt gcc caa aga cat tct ggt gct tac ctc ttc atg cct cat    2304
Tyr Gln Ser Ala Gln Arg His Ser Gly Ala Tyr Leu Phe Met Pro His
        755             760             765

tac gac tca cct gag aag aat gtt ctg cat ccc tac act aat cag aac    2352
Tyr Asp Ser Pro Glu Lys Asn Val Leu His Pro Tyr Thr Asn Gln Asn
        770             775             780

aac atg caa gat gat aac ata atc ata gtg tcc gga cct att tct acg    2400
Asn Met Gln Asp Asp Asn Ile Ile Ile Val Ser Gly Pro Ile Ser Thr
785             790             795             800

gaa atc acg acc atg tac ttg ccc ttc ttg gtg cac act att agg ata    2448
Glu Ile Thr Thr Met Tyr Leu Pro Phe Leu Val His Thr Ile Arg Ile
            805             810             815

tac aac gtg ccg gac ccg gta ctg tcg cgt gct att cta tta gag acc    2496
Tyr Asn Val Pro Asp Pro Val Leu Ser Arg Ala Ile Leu Leu Glu Thr
            820             825             830

gat gta gat ttc gag gcg cca cct aag aac aga gag act gag tta ttt    2544
Asp Val Asp Phe Glu Ala Pro Pro Lys Asn Arg Glu Thr Glu Leu Phe
            835             840             845

atg aga tta cag act gat ata caa aac ggt gac att ccc gaa ttt tac    2592
Met Arg Leu Gln Thr Asp Ile Gln Asn Gly Asp Ile Pro Glu Phe Tyr
        850             855             860

acc gat cag aac gga ttc cag tac caa aag agg gtc aaa gtg aat aaa    2640
Thr Asp Gln Asn Gly Phe Gln Tyr Gln Lys Arg Val Lys Val Asn Lys
865             870             875             880

cta gga ata gaa gct aat tac tac ccg atc act acc atg gcg tgc ctg    2688
Leu Gly Ile Glu Ala Asn Tyr Tyr Pro Ile Thr Thr Met Ala Cys Leu
            885             890             895
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caa gac gag gag acc cgg ctc act ctg ctg acg aac cac gct caa ggc    2736
Gln Asp Glu Glu Thr Arg Leu Thr Leu Leu Thr Asn His Ala Gln Gly
            900                 905                 910

gct gct gca tac gaa cca gga cgc tta gaa gtc atg ctc gat cgt cga    2784
Ala Ala Ala Tyr Glu Pro Gly Arg Leu Glu Val Met Leu Asp Arg Arg
            915                 920                 925

act ctt tat gat gac ttc aga gga atc ggt gaa gga gta gtc gat aac    2832
Thr Leu Tyr Asp Asp Phe Arg Gly Ile Gly Glu Gly Val Val Asp Asn
            930                 935                 940

aaa ccg acg act ttc cag aac tgg att tta att gaa tcc atg cca ggc    2880
Lys Pro Thr Thr Phe Gln Asn Trp Ile Leu Ile Glu Ser Met Pro Gly
945                 950                 955                 960

gtg acg cga gcc aag aga gac act agt gaa cca ggt ttc aaa ttt gtt    2928
Val Thr Arg Ala Lys Arg Asp Thr Ser Glu Pro Gly Phe Lys Phe Val
            965                 970                 975

aat gaa cgt cgt ttt ggc ccc ggc cag aag gaa agc cct tac caa gta    2976
Asn Glu Arg Arg Phe Gly Pro Gly Gln Lys Glu Ser Pro Tyr Gln Val
            980                 985                 990

ccg tcg cag act gcg gac tac ctg agc agg atg ttc aat tac ccg gtg    3024
Pro Ser Gln Thr Ala Asp Tyr Leu Ser Arg Met Phe Asn Tyr Pro Val
            995                 1000                1005

aac gtg tac ctg gtg gac act agc gag gtt ggc gag atc gag gtg aag    3072
Asn Val Tyr Leu Val Asp Thr Ser Glu Val Gly Glu Ile Glu Val Lys
    1010                1015                1020

ccg tac cag tcg ttc ctg cag agc ttc ccg ccc ggc atc cac ctg gtc    3120
Pro Tyr Gln Ser Phe Leu Gln Ser Phe Pro Pro Gly Ile His Leu Val
1025                1030                1035                1040

acc ctg cgc acc atc acc gac gac gtg ctc gaa ctc ttc ccc agc aac    3168
Thr Leu Arg Thr Ile Thr Asp Asp Val Leu Glu Leu Phe Pro Ser Asn
                1045                1050                1055

gaa agc tac atg gta ctg cac cga cca gga tac agc tgc gct gtc gga    3216
Glu Ser Tyr Met Val Leu His Arg Pro Gly Tyr Ser Cys Ala Val Gly
            1060                1065                1070

gag aag cca gtc gcc aag tct ccc aag ttt tcg tcc aaa acc agg ttc    3264
Glu Lys Pro Val Ala Lys Ser Pro Lys Phe Ser Ser Lys Thr Arg Phe
            1075                1080                1085

aat ggt ctg aac att cag aac atc act gca gtc agc ctg acc ggc ctg    3312
Asn Gly Leu Asn Ile Gln Asn Ile Thr Ala Val Ser Leu Thr Gly Leu
            1090                1095                1100
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aag tca ctc cga cct ctc aca ggt ctg agt gac atc cac ctg aac gct      3360
Lys Ser Leu Arg Pro Leu Thr Gly Leu Ser Asp Ile His Leu Asn Ala
1105             1110                1115                1120

atg gag gta aaa act tac aag atc agg ttt taa                          3393
Met Glu Val Lys Thr Tyr Lys Ile Arg Phe
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 1               5                  10                  15

tca gca ggc ccc tgg acc atg tcc cgc gcc ctg cgg cca ccg ctc ccg      96
Ser Ala Gly Pro Trp Thr Met Ser Arg Ala Leu Arg Pro Pro Leu Pro
             20                  25                  30

cct ctc tgc ttt ttc ctt ttg ttg ctg gcg gct gcc ggt gct cgg gcc     144
Pro Leu Cys Phe Phe Leu Leu Leu Leu Ala Ala Ala Gly Ala Arg Ala
             35                  40                  45

ggg gga tac gag aca tgc ccc aca gtg cag ccg aac atg ctg aac gtg     192
Gly Gly Tyr Glu Thr Cys Pro Thr Val Gln Pro Asn Met Leu Asn Val
         50                  55                  60

cac ctg ctg cct cac aca cat gat gac gtg ggc tgg ctc aaa acc gtg     240
His Leu Leu Pro His Thr His Asp Asp Val Gly Trp Leu Lys Thr Val
 65                  70                  75                  80

gac cag tac ttt tat gga atc aag aat gac atc cag cac gcc ggt gtg     288
Asp Gln Tyr Phe Tyr Gly Ile Lys Asn Asp Ile Gln His Ala Gly Val
                 85                  90                  95

cag tac atc ctg gac tcg gtc atc tct gcc ttg ctg gca gat ccc acc     336
Gln Tyr Ile Leu Asp Ser Val Ile Ser Ala Leu Leu Ala Asp Pro Thr
                 100                 105                 110

cgt cgc ttc att tac gtg gag att gcc ttc ttc tcc cgt tgg tgg cac     384
Arg Arg Phe Ile Tyr Val Glu Ile Ala Phe Phe Ser Arg Trp Trp His
                 115                 120                 125
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cag cag aca aat gcc aca cag gaa gtc gtg cga gac ctt gtg cgc cag      432
Gln Gln Thr Asn Ala Thr Gln Glu Val Val Arg Asp Leu Val Arg Gln
        130             135             140

ggg cgc ctg gag ttc gcc aat ggt ggc tgg gtg atg aac gat gag gca      480
Gly Arg Leu Glu Phe Ala Asn Gly Gly Trp Val Met Asn Asp Glu Ala
145             150             155             160

gcc acc cac tac ggt gcc atc gtg gac cag atg aca ctt ggg ctg cgc      528
Ala Thr His Tyr Gly Ala Ile Val Asp Gln Met Thr Leu Gly Leu Arg
                165             170             175

ttt ctg gag gac aca ttt ggc aat gat ggg cga ccc cgt gtg gcc tgg      576
Phe Leu Glu Asp Thr Phe Gly Asn Asp Gly Arg Pro Arg Val Ala Trp
            180             185             190

cac att gac ccc ttc ggc cac tct cgg gag cag gcc tcg ctg ttt gcg      624
His Ile Asp Pro Phe Gly His Ser Arg Glu Gln Ala Ser Leu Phe Ala
            195             200             205

cag atg ggc ttc gac ggc ttc ttc ttt ggg cgc ctt gat tat caa gat      672
Gln Met Gly Phe Asp Gly Phe Phe Phe Gly Arg Leu Asp Tyr Gln Asp
        210             215             220

aag tgg gta cgg atg cag aag ctg gag atg gag cag gtg tgg cgg gcc      720
Lys Trp Val Arg Met Gln Lys Leu Glu Met Glu Gln Val Trp Arg Ala
225             230             235             240

agc acc agc ctg aag ccc ccg acc gcg gac ctc ttc act ggt gtg ctt      768
Ser Thr Ser Leu Lys Pro Pro Thr Ala Asp Leu Phe Thr Gly Val Leu
                245             250             255

ccc aat ggt tac aac ccg cca agg aat ctg tgc tgg gat gtg ctg tgt      816
Pro Asn Gly Tyr Asn Pro Pro Arg Asn Leu Cys Trp Asp Val Leu Cys
                260             265             270

gtc gat cag ccg ctg gtg gag gac cct cgc agc ccc gag tac aac gcc      864
Val Asp Gln Pro Leu Val Glu Asp Pro Arg Ser Pro Glu Tyr Asn Ala
        275             280             285

aag gag ctg gtc gat tac ttc cta aat gtg gcc act gcc cag ggc cgg      912
Lys Glu Leu Val Asp Tyr Phe Leu Asn Val Ala Thr Ala Gln Gly Arg
        290             295             300

tat tac cgc acc aac cac act gtg atg acc atg ggc tcg gac ttc caa      960
Tyr Tyr Arg Thr Asn His Thr Val Met Thr Met Gly Ser Asp Phe Gln
305             310             315             320

tat gag aat gcc aac atg tgg ttc aag aac ctt gac aag ctc atc cgg     1008
Tyr Glu Asn Ala Asn Met Trp Phe Lys Asn Leu Asp Lys Leu Ile Arg
                325             330             335
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ctg gta aat gcg cag cag gca aaa gga agc agt gtc cat gtt ctc tac      1056
Leu Val Asn Ala Gln Gln Ala Lys Gly Ser Ser Val His Val Leu Tyr
            340                 345                 350

tcc acc ccc gct tgt tac ctc tgg gag ctg aac aag gcc aac ctc acc      1104
Ser Thr Pro Ala Cys Tyr Leu Trp Glu Leu Asn Lys Ala Asn Leu Thr
            355                 360                 365

tgg tca gtg aaa cat gac gac ttc ttc cct tac gcg gat ggc ccc cac      1152
Trp Ser Val Lys His Asp Asp Phe Phe Pro Tyr Ala Asp Gly Pro His
            370                 375                 380

cag ttc tgg acc ggt tac ttt tcc agt cgg ccg gcc ctc aaa cgc tac      1200
Gln Phe Trp Thr Gly Tyr Phe Ser Ser Arg Pro Ala Leu Lys Arg Tyr
385                 390                 395                 400

gag cgc ctc agc tac aac ttc ctg cag gtg tgc aac cag ctg gag gcg      1248
Glu Arg Leu Ser Tyr Asn Phe Leu Gln Val Cys Asn Gln Leu Glu Ala
                405                 410                 415

ctg gtg ggc ctg gcg gcc aac gtg gga ccc tat ggc tcc gga gac agt      1296
Leu Val Gly Leu Ala Ala Asn Val Gly Pro Tyr Gly Ser Gly Asp Ser
            420                 425                 430

gca ccc ctc aat gag gcg atg gct gtg ctc cag cat cac gac gcc gtc      1344
Ala Pro Leu Asn Glu Ala Met Ala Val Leu Gln His His Asp Ala Val
            435                 440                 445

agc ggc acc tcc cgc cag cac gtg gcc aac gac tac gcg cgc cag ctt      1392
Ser Gly Thr Ser Arg Gln His Val Ala Asn Asp Tyr Ala Arg Gln Leu
            450                 455                 460

gcg gca ggc tgg ggg cct tgc gag gtt ctt ctg agc aac gcg ctg gcg      1440
Ala Ala Gly Trp Gly Pro Cys Glu Val Leu Leu Ser Asn Ala Leu Ala
465                 470                 475                 480

cgg ctc aga ggc ttc aaa gat cac ttc acc ttt tgc caa cag cta aac      1488
Arg Leu Arg Gly Phe Lys Asp His Phe Thr Phe Cys Gln Gln Leu Asn
                485                 490                 495

atc agc atc tgc ccg ctc agc cag acg gcg gcg cgc ttc cag gtc atc      1536
Ile Ser Ile Cys Pro Leu Ser Gln Thr Ala Ala Arg Phe Gln Val Ile
            500                 505                 510

gtt tat aat ccc ctg ggg cgg aag gtg aat tgg atg gta cgg ctg ccg      1584
Val Tyr Asn Pro Leu Gly Arg Lys Val Asn Trp Met Val Arg Leu Pro
            515                 520                 525

gtc agc gaa ggc gtt ttc gtt gtg aag gac ccc aat ggc agg aca gtg      1632
Val Ser Glu Gly Val Phe Val Val Lys Asp Pro Asn Gly Arg Thr Val
            530                 535                 540
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ccc agc gat gtg gta ata ttt ccc agc tca gac agc cag gcg cac cct    1680
Pro Ser Asp Val Val Ile Phe Pro Ser Ser Asp Ser Gln Ala His Pro
545                 550                 555                 560

ccg gag ctg ctg ttc tca gcc tca ctg ccc gcc ctg ggc ttc agc acc    1728
Pro Glu Leu Leu Phe Ser Ala Ser Leu Pro Ala Leu Gly Phe Ser Thr
                565                 570                 575

tat tca gta gcc cag gtg cct cgc tgg aag ccc cag gcc cgc gca cca    1776
Tyr Ser Val Ala Gln Val Pro Arg Trp Lys Pro Gln Ala Arg Ala Pro
                580                 585                 590

cag ccc atc ccc aga aga tcc tgg tcc cct gct tta acc atc gaa aat    1824
Gln Pro Ile Pro Arg Arg Ser Trp Ser Pro Ala Leu Thr Ile Glu Asn
            595                 600                 605

gag cac atc cgg gca acg ttt gat cct gac aca ggg ctg ttg atg gag    1872
Glu His Ile Arg Ala Thr Phe Asp Pro Asp Thr Gly Leu Leu Met Glu
        610                 615                 620

att atg aac atg aat cag caa ctc ctg ctg cct gtt cgc cag acc ttc    1920
Ile Met Asn Met Asn Gln Gln Leu Leu Leu Pro Val Arg Gln Thr Phe
625                 630                 635                 640

ttc tgg tac aac gcc agt ata ggt gac aac gaa agt gac cag gcc tca    1968
Phe Trp Tyr Asn Ala Ser Ile Gly Asp Asn Glu Ser Asp Gln Ala Ser
                645                 650                 655

ggt gcc tac atc ttc aga ccc aac caa cag aaa ccg ctg cct gtg agc    2016
Gly Ala Tyr Ile Phe Arg Pro Asn Gln Gln Lys Pro Leu Pro Val Ser
                660                 665                 670

cgc tgg gct cag atc cac ctg gtg aag aca ccc ttg gtg cag gag gtg    2064
Arg Trp Ala Gln Ile His Leu Val Lys Thr Pro Leu Val Gln Glu Val
                675                 680                 685

cac cag aac ttc tca gct tgg tgt tcc cag gtg gtt cgc ctg tac cca    2112
His Gln Asn Phe Ser Ala Trp Cys Ser Gln Val Val Arg Leu Tyr Pro
        690                 695                 700

gga cag cgg cac ctg gag cta gag tgg tcg gtg ggg ccg ata cct gtg    2160
Gly Gln Arg His Leu Glu Leu Glu Trp Ser Val Gly Pro Ile Pro Val
705                 710                 715                 720

ggc gac acc tgg ggg aag gag gtc atc agc cgt ttt gac aca ccg ctg    2208
Gly Asp Thr Trp Gly Lys Glu Val Ile Ser Arg Phe Asp Thr Pro Leu
                725                 730                 735

gag aca aag gga cgc ttc tac aca gac agc aat ggc cgg gag atc ctg    2256
Glu Thr Lys Gly Arg Phe Tyr Thr Asp Ser Asn Gly Arg Glu Ile Leu
                740                 745                 750
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gag agg agg cgg gat tat cga ccc acc tgg aaa ctg aac cag acg gag   2304
Glu Arg Arg Arg Asp Tyr Arg Pro Thr Trp Lys Leu Asn Gln Thr Glu
        755   760   765

ccc gtg gca gga aac tac tat cca gtc aac acc cgg att tac atc acg   2352
Pro Val Ala Gly Asn Tyr Tyr Pro Val Asn Thr Arg Ile Tyr Ile Thr
        770   775   780

gat gga aac atg cag ctg act gtg ctg act gac cgc tcc cag ggg ggc   2400
Asp Gly Asn Met Gln Leu Thr Val Leu Thr Asp Arg Ser Gln Gly Gly
785   790   795   800

agc agc ctg aga gat ggc tcg ctg gag ctc atg gtg cac cga agg ctg   2448
Ser Ser Leu Arg Asp Gly Ser Leu Glu Leu Met Val His Arg Arg Leu
            805   810   815

ctg aag gac gat gga cgc gga gta tcg gag cca cta atg gag aac ggg   2496
Leu Lys Asp Asp Gly Arg Gly Val Ser Glu Pro Leu Met Glu Asn Gly
            820   825   830

tcg ggg gcg tgg gtg cga ggg cgc cac ctg gtg ctg ctg gac aca gcc   2544
Ser Gly Ala Trp Val Arg Gly Arg His Leu Val Leu Leu Asp Thr Ala
            835   840   845

cag gct gca gcc gcc gga cac cgg ctc ctg gcg gag cag gag gtc ctg   2592
Gln Ala Ala Ala Ala Gly His Arg Leu Leu Ala Glu Gln Glu Val Leu
        850   855   860

gcc cct cag gtg gtg ctg gcc ccg ggt ggc ggc gcc gcc tac aat ctc   2640
Ala Pro Gln Val Val Leu Ala Pro Gly Gly Gly Ala Ala Tyr Asn Leu
865   870   875   880

ggg gct cct ccg cgc acg cag ttc tca ggg ctg cgc agg gac ctg ccg   2688
Gly Ala Pro Pro Arg Thr Gln Phe Ser Gly Leu Arg Arg Asp Leu Pro
                885   890   895

ccc tcg gtg cac ctg ctc acg ctg gcc agc tgg ggc ccc gaa atg gtg   2736
Pro Ser Val His Leu Leu Thr Leu Ala Ser Trp Gly Pro Glu Met Val
            900   905   910

ctg ctg cgc ttg gag cac cag ttt gcc gta gga gag gat tcc gga cgt   2784
Leu Leu Arg Leu Glu His Gln Phe Ala Val Gly Glu Asp Ser Gly Arg
            915   920   925

aac ctg agc gcc ccc gtt acc ttg aac ttg agg gac ctg ttc tcc acc   2832
Asn Leu Ser Ala Pro Val Thr Leu Asn Leu Arg Asp Leu Phe Ser Thr
        930   935   940

ttc acc atc acc cgc ctg cag gag acc acg ctg gtg gcc aac cag ctc   2880
Phe Thr Ile Thr Arg Leu Gln Glu Thr Thr Leu Val Ala Asn Gln Leu
945   950   955   960

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cgc gag gca gcc tcc agg ctc aag tgg aca aca aac aca ggc ccc aca    2928
Arg Glu Ala Ala Ser Arg Leu Lys Trp Thr Thr Asn Thr Gly Pro Thr
                965             970             975

ccc cac caa act ccg tac cag ctg gac ccg gcc aac atc acg ctg gaa    2976
Pro His Gln Thr Pro Tyr Gln Leu Asp Pro Ala Asn Ile Thr Leu Glu
                980             985             990

ccc atg gaa atc cgc act ttc ctg gcc tca gtt caa tgg aag gag gtg    3024
Pro Met Glu Ile Arg Thr Phe Leu Ala Ser Val Gln Trp Lys Glu Val
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gat ggt tag                                                        3033
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gtg gag aag ttc gtg tcc ccg atc tac ttc acc gac tgt aac ctc cgc     96
Val Glu Lys Phe Val Ser Pro Ile Tyr Phe Thr Asp Cys Asn Leu Arg
            20              25              30

ggc agg ctt ttt ggg gcc agc tgc cct gtg gct gtg ctc tcc agc ttc    144
Gly Arg Leu Phe Gly Ala Ser Cys Pro Val Ala Val Leu Ser Ser Phe
            35              40              45

ctg acg ccg gag aga ctt ccc tac cag gag gca gtc cag cgg gac ttc    192
Leu Thr Pro Glu Arg Leu Pro Tyr Gln Glu Ala Val Gln Arg Asp Phe
        50              55              60

cgc ccc gcg cag gtc ggc gac agc ttc gga ccc aca tgg tgg acc tgc    240
Arg Pro Ala Gln Val Gly Asp Ser Phe Gly Pro Thr Trp Trp Thr Cys
 65              70              75              80

tgg ttc cgg gtg gag ctg acc atc cca gag gca tgg gtg ggc cag gaa    288
Trp Phe Arg Val Glu Leu Thr Ile Pro Glu Ala Trp Val Gly Gln Glu
            85              90              95
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gtt cac ctt tgc tgg gaa agt gat gga gaa ggt ctg gtg tgg cgt gat    336
Val His Leu Cys Trp Glu Ser Asp Gly Glu Gly Leu Val Trp Arg Asp
            100                 105                 110

gga gaa cct gtc cag ggt tta acc aaa gag ggt gag aag acc agc tat    384
Gly Glu Pro Val Gln Gly Leu Thr Lys Glu Gly Glu Lys Thr Ser Tyr
            115                 120                 125

gtc ctg act gac agg ctg ggg gaa aga gac ccc cga agc ctc act ctc    432
Val Leu Thr Asp Arg Leu Gly Glu Arg Asp Pro Arg Ser Leu Thr Leu
            130                 135                 140

tat gtg gaa gta gcc tgc aat ggg ctc ctg ggg gcc ggg aag gga agc    480
Tyr Val Glu Val Ala Cys Asn Gly Leu Leu Gly Ala Gly Lys Gly Ser
145                 150                 155                 160

atg att gca gcc cct gac cct gag aag ata ttc cag ctg agc cgg gct    528
Met Ile Ala Ala Pro Asp Pro Glu Lys Ile Phe Gln Leu Ser Arg Ala
                165                 170                 175

gag cta gct gtg ttc cac cgg gat gtc cac atg ctc ctg gtg gat ctg    576
Glu Leu Ala Val Phe His Arg Asp Val His Met Leu Leu Val Asp Leu
                180                 185                 190

gag ctg ctg ctg ggc ata gcc aag ggc ctc ggg aag gac aac cag cgc    624
Glu Leu Leu Leu Gly Ile Ala Lys Gly Leu Gly Lys Asp Asn Gln Arg
            195                 200                 205

agc ttc cag gcc ctg tac aca gcc aat cag atg gtg aac gtg tgt gac    672
Ser Phe Gln Ala Leu Tyr Thr Ala Asn Gln Met Val Asn Val Cys Asp
        210                 215                 220

cct gcc cag ccc gag acc ttc cca gtg gcc cag gcc ctg gcc tcc agg    720
Pro Ala Gln Pro Glu Thr Phe Pro Val Ala Gln Ala Leu Ala Ser Arg
225                 230                 235                 240

ttc ttt ggc caa cat ggg ggt gaa agc caa cac acc att cat gcc aca    768
Phe Phe Gly Gln His Gly Gly Glu Ser Gln His Thr Ile His Ala Thr
                245                 250                 255

ggg cac tgc cac att gat aca gcc tgg ctt tgg ccc ttc aaa gag act    816
Gly His Cys His Ile Asp Thr Ala Trp Leu Trp Pro Phe Lys Glu Thr
                260                 265                 270

gtg agg aaa tgt gcc cgg agc tgg gtg acc gcc ctg cag ctc atg gag    864
Val Arg Lys Cys Ala Arg Ser Trp Val Thr Ala Leu Gln Leu Met Glu
            275                 280                 285

cgg aac cct gag ttc atc ttt gcc tgc tcc cag gcg cag cag ctg gaa    912
Arg Asn Pro Glu Phe Ile Phe Ala Cys Ser Gln Ala Gln Gln Leu Glu
            290                 295                 300
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tgg gtg aag agc cgc tac cct ggc ctg tac tcc cgc atc cag gag ttt    960
Trp Val Lys Ser Arg Tyr Pro Gly Leu Tyr Ser Arg Ile Gln Glu Phe
305                 310             315                 320

gcg tgc cgt ggg cag ttt gtg cct gtg ggg ggc acc tgg gtg gaa atg    1008
Ala Cys Arg Gly Gln Phe Val Pro Val Gly Gly Thr Trp Val Glu Met
                325                 330             335

gat ggg aac ctg ccc agt gga gag gcc atg gtg agg cag ttt ttg cag    1056
Asp Gly Asn Leu Pro Ser Gly Glu Ala Met Val Arg Gln Phe Leu Gln
                340             345                 350

ggc cag aac ttc ttt ctg cag gag ttt ggg aag atg tgc tct gag ttc    1104
Gly Gln Asn Phe Phe Leu Gln Glu Phe Gly Lys Met Cys Ser Glu Phe
                355             360             365

tgg ctg ccg gac acc ttt ggc tac tca gca cag ctc ccc cag atc atg    1152
Trp Leu Pro Asp Thr Phe Gly Tyr Ser Ala Gln Leu Pro Gln Ile Met
                370             375             380

cac ggc tgt ggc atc agg cgc ttt ctc acc cag aaa ttg agc tgg aat    1200
His Gly Cys Gly Ile Arg Arg Phe Leu Thr Gln Lys Leu Ser Trp Asn
385                 390             395                 400

ttg gtg aac tcc ttc cca cac cat aca ttt ttc tgg gag ggc ctg gat    1248
Leu Val Asn Ser Phe Pro His His Thr Phe Phe Trp Glu Gly Leu Asp
                405             410                 415

ggc tcc cgt gta ctg gtc cac ttc cca cct ggc gac tcc tat ggg atg    1296
Gly Ser Arg Val Leu Val His Phe Pro Pro Gly Asp Ser Tyr Gly Met
                420             425             430

cag ggc agc gtg gag gag gtg ctg aag acc gtg gcc aac aac cgg gac    1344
Gln Gly Ser Val Glu Glu Val Leu Lys Thr Val Ala Asn Asn Arg Asp
                435             440             445

aag ggg cgg gcc aac cac agt gcc ttc ctc ttt ggc ttt ggg gat ggg    1392
Lys Gly Arg Ala Asn His Ser Ala Phe Leu Phe Gly Phe Gly Asp Gly
                450             455             460

ggt ggt ggc ccc acc cag acc atg ctg gac cgc ctg aag cgc ctg agc    1440
Gly Gly Gly Pro Thr Gln Thr Met Leu Asp Arg Leu Lys Arg Leu Ser
465                 470             475                 480

aat acg gat ggg ctg ccc agg gtg cag cta tct tct cca aga cag ctc    1488
Asn Thr Asp Gly Leu Pro Arg Val Gln Leu Ser Ser Pro Arg Gln Leu
                485             490             495

ttc tca gca ctg gag agt gac tca gag cag ctg tgc acg tgg gtt ggg    1536
Phe Ser Ala Leu Glu Ser Asp Ser Glu Gln Leu Cys Thr Trp Val Gly
                500             505             510
```

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gag ctc ttc ttg gag ctg cac aat ggc aca tac acc acc cat gcc cag    1584
Glu Leu Phe Leu Glu Leu His Asn Gly Thr Tyr Thr Thr His Ala Gln
        515                 520                 525

atc aag aag ggg aac cgg gaa tgt gag cgg atc ctg cac gac gtg gag    1632
Ile Lys Lys Gly Asn Arg Glu Cys Glu Arg Ile Leu His Asp Val Glu
        530                 535                 540

ctg ctc agt agc ctg gcc ctg gcc cgc agt gcc cag ttc cta tac cca    1680
Leu Leu Ser Ser Leu Ala Leu Ala Arg Ser Ala Gln Phe Leu Tyr Pro
545                 550                 555                 560

gca gcc cag ctg cag cac ctc tgg agg ctc ctt ctt ctg aac cag ttc    1728
Ala Ala Gln Leu Gln His Leu Trp Arg Leu Leu Leu Leu Asn Gln Phe
                565                 570                 575

cat gat gtg gtg act gga agc tgc atc cag atg gtg gca gag gaa gcc    1776
His Asp Val Val Thr Gly Ser Cys Ile Gln Met Val Ala Glu Glu Ala
                580                 585                 590

atg tgc cat tat gaa gac atc cgt tcc cat ggc aat aca ctg ctc agc    1824
Met Cys His Tyr Glu Asp Ile Arg Ser His Gly Asn Thr Leu Leu Ser
                595                 600                 605

gct gca gcc gca gcc ctg tgt gct ggg gag cca ggt cct gag ggc ctc    1872
Ala Ala Ala Ala Ala Leu Cys Ala Gly Glu Pro Gly Pro Glu Gly Leu
        610                 615                 620

ctc atc gtc aac aca ctg ccc tgg aag cgg atc gaa gtg atg gcc ctg    1920
Leu Ile Val Asn Thr Leu Pro Trp Lys Arg Ile Glu Val Met Ala Leu
625                 630                 635                 640

ccc aaa ccg ggc ggg gcc cac agc cta gcc ctg gtg aca gtg ccc agc    1968
Pro Lys Pro Gly Gly Ala His Ser Leu Ala Leu Val Thr Val Pro Ser
                645                 650                 655

atg ggc tat gct cct gtt cct ccc ccc acc tca ctg cag ccc ctg ctg    2016
Met Gly Tyr Ala Pro Val Pro Pro Pro Thr Ser Leu Gln Pro Leu Leu
                660                 665                 670

ccc cag cag cct gtg ttc gta gtg caa gag act gat ggc tcc gtg act    2064
Pro Gln Gln Pro Val Phe Val Val Gln Glu Thr Asp Gly Ser Val Thr
                675                 680                 685

ctg gac aat ggc atc atc cga gtg aag ctg gac cca act ggt cgc ctg    2112
Leu Asp Asn Gly Ile Ile Arg Val Lys Leu Asp Pro Thr Gly Arg Leu
        690                 695                 700

acg tcc ttg gtc ctg gtg gcc tct ggc agg gag gcc att gct gag ggc    2160
Thr Ser Leu Val Leu Val Ala Ser Gly Arg Glu Ala Ile Ala Glu Gly
705                 710                 715                 720
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gcc gtg ggg aac cag ttt gtg cta ttt gat gat gtc ccc ttg tac tgg      2208
Ala Val Gly Asn Gln Phe Val Leu Phe Asp Asp Val Pro Leu Tyr Trp
                725                 730                 735

gat gca tgg gac gtc atg gac tac cac ctg gag aca cgg aag cct gtg      2256
Asp Ala Trp Asp Val Met Asp Tyr His Leu Glu Thr Arg Lys Pro Val
                740                 745                 750

ctg ggc cag gca ggg acc ctg gca gtg ggc acc gag ggc ggc ctg cgg      2304
Leu Gly Gln Ala Gly Thr Leu Ala Val Gly Thr Glu Gly Gly Leu Arg
                755                 760                 765

ggc agc gcc tgg ttc ttg cta cag atc agc ccc aac agt cgg ctt agc      2352
Gly Ser Ala Trp Phe Leu Leu Gln Ile Ser Pro Asn Ser Arg Leu Ser
                770                 775                 780

cag gag gtt gtg ctg gac gtt ggc tgc ccc tat gtc cgc ttc cac acc      2400
Gln Glu Val Val Leu Asp Val Gly Cys Pro Tyr Val Arg Phe His Thr
785                 790                 795                 800

gag gta cac tgg cat gag gcc cac aag ttc ctg aag gtg gag ttc cct      2448
Glu Val His Trp His Glu Ala His Lys Phe Leu Lys Val Glu Phe Pro
                805                 810                 815

gct cgc gtg cgg agt tcc cag gcc acc tat gag atc cag ttt ggg cac      2496
Ala Arg Val Arg Ser Ser Gln Ala Thr Tyr Glu Ile Gln Phe Gly His
                820                 825                 830

ctg cag cga cct acc cac tac aat acc tct tgg gac tgg gct cga ttt      2544
Leu Gln Arg Pro Thr His Tyr Asn Thr Ser Trp Asp Trp Ala Arg Phe
                835                 840                 845

gag gtg tgg gcc cat cgc tgg atg gat ctg tca gaa cac ggc ttt ggg      2592
Glu Val Trp Ala His Arg Trp Met Asp Leu Ser Glu His Gly Phe Gly
                850                 855                 860

ctg gcc ctg ctc aac gac tgc aag tat ggc gcg tca gtg cga ggc agc      2640
Leu Ala Leu Leu Asn Asp Cys Lys Tyr Gly Ala Ser Val Arg Gly Ser
865                 870                 875                 880

atc ctc agc ctc tcg ctc ttg cgg gcg cct aaa gcc ccg gac gct act      2688
Ile Leu Ser Leu Ser Leu Leu Arg Ala Pro Lys Ala Pro Asp Ala Thr
                885                 890                 895

gct gac acg ggg cgc cac gag ttc acc tat gca ctg atg ccg cac aag      2736
Ala Asp Thr Gly Arg His Glu Phe Thr Tyr Ala Leu Met Pro His Lys
                900                 905                 910

ggc tct ttc cag gat gct ggc gtt atc caa gct gcc tac agc cta aac      2784
Gly Ser Phe Gln Asp Ala Gly Val Ile Gln Ala Ala Tyr Ser Leu Asn
                915                 920                 925
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ttc ccc ctg ttg gct ctg cca gcc ccc agc cca gcg ccc gcc acc tcc    2832
Phe Pro Leu Leu Ala Leu Pro Ala Pro Ser Pro Ala Pro Ala Thr Ser
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tgg agt gcg ttt tcc gtg tct tca ccc gcg gtc gta ttg gag acc gtc    2880
Trp Ser Ala Phe Ser Val Ser Ser Pro Ala Val Val Leu Glu Thr Val
945                     950                 955                 960

aag cag gcg gag agc agc ccc cag cgc cgc tcg ctg gtc ctg agg ctg    2928
Lys Gln Ala Glu Ser Ser Pro Gln Arg Arg Ser Leu Val Leu Arg Leu
                965                 970                 975

tat gag gcc cac ggc agc cac gtg gac tgc tgg ctg cac ttg tcg ctg    2976
Tyr Glu Ala His Gly Ser His Val Asp Cys Trp Leu His Leu Ser Leu
            980                 985                 990

ccg gtt cag gag gcc atc ctc tgc gat ctc ttg gag cga cca gac cct    3024
Pro Val Gln Glu Ala Ile Leu Cys Asp Leu Leu Glu Arg Pro Asp Pro
        995                 1000                1005

gct ggc cac ttg act tcg gga caa ccg cct gaa gct cac ctt ttc tcc    3072
Ala Gly His Leu Thr Ser Gly Gln Pro Pro Glu Ala His Leu Phe Ser
    1010                1015                1020

ctt cca agt gct gtc cct gtt gct cgt gct tca gcc tcc gcc aca ctg    3120
Leu Pro Ser Ala Val Pro Val Ala Arg Ala Ser Ala Ser Ala Thr Leu
1025                1030                1035                1040

agt ccc tgg ggc tgg ggt ttt gtt tgt aga agg ctc tgg gga ctc cta    3168
Ser Pro Trp Gly Trp Gly Phe Val Cys Arg Arg Leu Trp Gly Leu Leu
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att tct gct tcc cca gcc taa                                        3189
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            20                  25                  30

Leu Thr Lys Arg Gln Ala Asn Asp Leu Arg Arg Lys Ile Gly Asn Leu
            35                  40                  45

Glu His Val Ala Glu Glu Asn Gly Arg Thr Ile Asp Arg Leu Glu Gln
        50                  55                  60

Glu Val Gln Arg Ala Lys Ala Glu Lys Ser Val Asp Phe Asp Glu Glu
65                  70                  75                  80

Lys Glu Lys Thr Glu Glu Lys Glu Val Glu Lys Glu Glu Lys Glu Val
                85                  90                  95

Ala Pro Val Pro Val Arg Gly Asn Arg Gly Glu Met Ala His Ile His
            100                 105                 110

Gln Val Lys Gln His Ile Lys Pro Thr Pro Ser Met Lys Asp Val Cys
            115                 120                 125

Gly Ile Arg Glu Asn Val Ser Ile Ala His Ser Asp Leu Gln Met Leu
            130                 135                 140

Asp Leu Tyr Asp Thr Trp Lys Phe Glu Asn Pro Asp Gly Gly Val Trp
145                 150                 155                 160

Lys Gln Gly Trp Lys Ile Glu Tyr Asp Ala Glu Lys Val Lys Ser Leu
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Pro Arg Leu Glu Val Ile Val Ile Pro His Ser His Cys Asp Pro Gly
            180                 185                 190
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Trp Ile Met Thr Phe Glu Glu Tyr Tyr Asn Arg Gln Thr Arg Asn Ile
     195   200   205

Leu Asp Gly Met Ala Lys His Leu Ala Glu Lys Asp Glu Met Arg Phe
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Ile Tyr Ala Glu Ile Ser Phe Phe Glu Thr Trp Trp Arg Asp Gln Ala
225   230   235   240

Asp Glu Ile Lys Lys Lys Val Lys Gly Tyr Leu Glu Ala Gly Lys Phe
           245   250   255

Glu Ile Val Thr Gly Gly Trp Val Met Thr Asp Glu Ala Asn Ala His
         260   265   270

Tyr His Ser Met Ile Thr Glu Leu Phe Glu Gly His Glu Trp Ile Gln
     275   280   285

Asn His Leu Gly Lys Ser Ala Ile Pro Gln Ser His Trp Ser Ile Asp
     290   295   300

Pro Phe Gly Leu Ser Pro Ser Met Pro His Leu Leu Thr Ser Ala Asn
305   310   315   320

Ile Thr Asn Ala Val Ile Gln Arg Val His Tyr Ser Val Lys Arg Glu
           325   330   335

Leu Ala Leu Lys Lys Asn Leu Glu Phe Tyr Trp Arg Gln Leu Phe Gly
          340   345   350

Ser Thr Gly His Pro Asp Leu Arg Ser His Ile Met Pro Phe Tyr Ser
         355   360   365

Tyr Asp Ile Pro His Thr Cys Gly Pro Glu Pro Ser Val Cys Cys Gln
     370   375   380

Phe Asp Phe Arg Arg Met Pro Glu Gly Gly Lys Ser Cys Asp Trp Gly
385   390   395   400

Ile Pro Pro Gln Lys Ile Asn Asp Asp Asn Val Ala His Arg Ala Glu
           405   410   415

Met Ile Tyr Asp Gln Tyr Arg Lys Lys Ser Gln Leu Phe Lys Asn Asn
          420   425   430

Val Ile Phe Gln Pro Leu Gly Asp Asp Phe Arg Tyr Asp Ile Asp Phe
         435   440   445

Glu Trp Asn Ser Gln Tyr Glu Asn Tyr Lys Lys Leu Phe Glu Tyr Met
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Asn Ser Lys Ser Glu Trp Asn Val His Ala Gln Phe Gly Thr Leu Ser
465   470   475   480

Asp Tyr Phe Lys Lys Leu Asp Thr Ala Ile Ser Ala Ser Gly Glu Gln
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            500   505   510

His Tyr Trp Ser Gly Tyr Phe Thr Ser Arg Pro Phe Tyr Lys Gln Leu
            515   520   525

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            530   535   540

Leu Ala Asn Ile Glu Glu Glu Gly Met Val Glu Ala Lys Ile Phe Glu
545   550   555   560

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Gly Val Thr Gly Thr Ala Lys Asp His Val Val Leu Asp Tyr Gly Gln
            580   585   590

Lys Met Ile Asp Ala Leu Asn Ala Cys Glu Asp Ile Leu Ser Glu Ala
            595   600   605

Leu Val Val Leu Leu Gly Ile Asp Ser Thr Asn Lys Met Gln Met Asp
            610   615   620

Glu His Arg Val Asn Glu Asn Leu Leu Pro Glu Lys Arg Val Tyr Lys
625   630   635   640

Ile Gly Gln Asn Val Val Leu Phe Asn Thr Leu Ser Arg Asn Arg Asn
            645   650   655

Glu Pro Ile Cys Ile Gln Val Asp Ser Leu Asp Ala Gly Val Glu Ala
            660   665   670

Asp Pro Pro Ile Lys Lys Gln Gln Val Ser Pro Val Ile Ala Tyr Asp
            675   680   685

Glu Glu Lys Lys Thr Leu Val Val Lys Asn Gly Ile Phe Glu Leu Cys
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Phe Met Leu Ser Leu Gly Pro Met Glu Ser Val Ser Phe Arg Leu Val
705   710   715   720

Lys Asn Thr Thr Thr Ser Lys Val Glu Ile Ile Thr Asn Asn Ala Ala
            725   730   735

Glu Phe Lys Glu Thr Ser Phe Lys Ser Ser Ser Thr Ser Gly Asp Phe
            740   745   750

Thr Val Lys Asn Asp Lys Val Glu Ala Glu Phe Asp Gly Glu Asn Gly
            755   760   765

Met Ile Lys Arg Ala Thr Ser Leu Val Asp Asp Lys Pro Ile Asp Leu
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Asn Ser His Phe Ile His Tyr Gly Ala Arg Lys Ser Lys Arg Lys Phe
785   790   795   800

Ala Asn Gly Asn Glu Asp Asn Pro Ala Gly Ala Tyr Leu Phe Leu Pro
            805   810   815

Asp Gly Glu Ala Arg Glu Leu Lys Lys Gln Ser Ser Asp Trp Ile Leu
            820   825   830

Val Lys Gly Glu Val Val Gln Lys Val Phe Ala Thr Pro Asn Asn Asp
        835   840   845

Leu Lys Ile Leu Gln Thr Tyr Thr Leu Tyr Gln Gly Leu Pro Trp Ile
    850   855   860

Asp Leu Asp Asn Glu Val Asp Val Arg Ser Lys Glu Asn Phe Glu Leu
865   870   875   880

Ala Leu Arg Phe Ser Ser Ser Val Asn Ser Gly Asp Glu Phe Phe Thr
            885   890   895

Asp Leu Asn Gly Met Gln Met Ile Lys Arg Arg Arg Gln Thr Lys Leu
            900   905   910

Pro Thr Gln Ala Asn Phe Tyr Pro Met Ser Ala Gly Val Tyr Ile Glu
        915   920   925

Asp Asp Thr Thr Arg Met Ser Ile His Ser Ala Gln Ala Leu Gly Val
    930   935   940

Ser Ser Leu Ser Ser Gly Gln Ile Glu Ile Met Leu Asp Arg Arg Leu
945   950   955   960

Ser Ser Asp Asp Asn Arg Gly Leu Gln Gln Gly Val Arg Asp Asn Lys
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Arg Thr Val Ala His Phe Arg Ile Val Ile Glu Pro Met Ser Ser Ser
            980   985   990

Ser Gly Asn Lys Lys Glu Glu Arg Val Gly Phe His Ser His Val Gly
        995   1000   1005

His Leu Ala Thr Trp Ser Leu His Tyr Pro Leu Val Lys Met Ile Gly
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Asp Ala Thr Pro Lys Ser Ile Ser Ser Lys Asn Val Glu Gln Glu Leu
1025   1030   1035   1040

Asn Cys Asp Leu His Leu Val Thr Phe Arg Thr Leu Ala Ser Pro Thr
            1045   1050   1055

Thr Tyr Glu Ala Asn Glu Arg Ser Thr Ala Ala Glu Lys Lys Ala Ala
        1060   1065   1070

Met Val Met His Arg Val Val Pro Asp Cys Arg Ser Arg Leu Thr Leu
        1075   1080   1085

Pro Asp Thr Ser Cys Leu Ala Thr Gly Leu Glu Ile Glu Pro Leu Lys
        1090   1095   1100

Leu Ile Ser Thr Leu Lys Ser Ala Lys Lys Thr Ser Leu Thr Asn Leu
1105   1110   1115   1120

Tyr Glu Gly Asn Lys Ala Glu Gln Phe Arg Leu Gln Pro Asn Asp Ile
                    1125   1130   1135

Ser Ser Ile Leu Val Ser Phe
                1140

<210> 93
<211> 1279
<212> PRT
<213> Rattus norvegicus

<400> 93
Met Ala Cys Ile Gly Gly Ala Gln Gly Gln Arg Gln Ala Val Glu Lys
    1   5   10   15

Glu Pro Ser His Gln Gly Tyr Pro Trp Lys Pro Met Thr Asn Gly Ser
                20   25   30

Cys Ser Glu Leu Ala Leu Leu Ser Lys Thr Arg Met Tyr Cys His Gln
            35   40   45

Gly Cys Val Arg Pro Pro Arg Thr Asp Val Lys Asn Phe Lys Thr Thr
        50   55   60

Thr Asp Thr Gln Ser Val Pro Gly Val Ser Met Lys Leu Lys Lys Gln
65   70   75   80

Val Thr Val Cys Gly Ala Ala Ile Phe Cys Val Ala Val Phe Ser Leu
                85   90   95

Tyr Leu Met Leu Asp Arg Val Gln His Asp Pro Ala Arg His Gln Asn
            100   105   110

Gly Gly Asn Phe Pro Arg Ser Gln Ile Ser Val Leu Gln Asn Arg Ile
        115   120   125

Glu Gln Leu Glu Gln Leu Leu Glu Glu Asn His Glu Ile Ile Ser His
130   135   140

Ile Lys Asp Ser Val Leu Glu Leu Thr Ala Asn Ala Glu Gly Pro Pro
145   150   155   160

Ala Leu Leu Pro Tyr His Thr Ala Asn Gly Ser Trp Ala Val Leu Pro
                165   170   175

Glu Pro Arg Pro Ser Phe Phe Ser Val Ser Pro Glu Asp Cys Gln Phe
            180   185   190

Ala Leu Gly Gly Arg Gly Gln Lys Pro Glu Leu Gln Met Leu Thr Val
            195   200   205

Ser Glu Asp Leu Pro Phe Asp Asn Val Glu Gly Gly Val Trp Arg Gln
        210   215   220

Gly Phe Asp Ile Ser Tyr Ser Pro Asn Asp Trp Asp Ala Glu Asp Leu
225   230   235   240

Gln Val Phe Val Val Pro His Ser His Asn Asp Pro Gly Glu Glu Pro
                245   250   255

Ala Gly Pro Ser Arg Ser Val Gln Gly Gly Leu Ser Gly Asp Arg Arg
            260   265   270

Trp Ile Lys Thr Phe Asp Lys Tyr Tyr Thr Glu Gln Thr Gln His Ile
        275   280   285

Leu Asn Ser Met Val Ser Lys Leu Gln Glu Asp Pro Arg Arg Arg Phe
    290   295   300

Leu Trp Ala Glu Val Ser Phe Phe Ala Lys Trp Trp Asp Asn Ile Ser
305   310   315   320

Ala Gln Lys Arg Ala Ala Val Arg Arg Leu Val Gly Asn Gly Gln Leu
            325   330   335

Glu Ile Ala Thr Gly Gly Trp Val Met Pro Asp Glu Ala Asn Ser His
            340   345   350

Tyr Phe Ala Leu Val Gly Gln Leu Ile Glu Gly Pro Pro Pro Val Arg
        355   360   365

Arg Ala Val Asp Pro Phe Gly His Ser Ser Thr Met Pro Tyr Leu Leu
    370   375   380

Arg Arg Ala Asn Leu Thr Ser Met Leu Ile Gln Arg Val His Tyr Ala
385   390   395   400

Ile Lys Lys His Phe Ala Ala Thr His Ser Leu Glu Phe Met Trp Arg
            405   410   415

Gln Thr Trp Asp Ser Asp Ser Ser Thr Asp Ile Phe Cys His Met Met
            420   425   430

Pro Phe Tyr Ser Tyr Asp Val Pro His Thr Cys Gly Pro Asp Pro Lys
        435   440   445

Ile Cys Cys Gln Phe Asp Phe Lys Arg Leu Pro Gly Gly Arg Ile Asn
    450   455   460

Cys Pro Trp Lys Val Pro Pro Arg Ala Ile Thr Glu Ala Asn Val Ala
465   470   475   480

Asp Arg Ala Ala Leu Leu Leu Asp Gln Tyr Arg Lys Lys Ser Arg Leu
            485   490   495

Phe Arg Ser Ser Val Leu Leu Val Pro Leu Gly Asp Asp Phe Arg Tyr
            500   505   510

Asp Lys Pro Gln Glu Trp Asp Ala Gln Phe Phe Asn Tyr Gln Arg Leu
        515   520   525

Phe Asp Phe Leu Asn Ser Lys Pro Glu Phe His Val Gln Ala Gln Phe
    530   535   540

Gly Thr Leu Ser Glu Tyr Phe Asp Ala Leu Tyr Lys Arg Thr Gly Val
545   550   555   560

Glu Pro Gly Ala Arg Pro Pro Gly Phe Pro Val Leu Ser Gly Asp Phe
            565   570   575

Phe Ser Tyr Ala Asp Arg Glu Asp His Tyr Trp Thr Gly Tyr Tyr Thr
            580   585   590

Ser Arg Pro Phe Tyr Lys Ser Leu Asp Arg Val Leu Glu Thr His Leu
        595   600   605

Arg Gly Ala Glu Val Leu Tyr Ser Leu Ala Leu Ala His Ala Arg Arg
    610   615   620

Ser Gly Leu Thr Gly Gln Tyr Pro Leu Ser Asp Tyr Ala Val Leu Thr
625   630   635   640

Glu Ala Arg Arg Thr Leu Gly Leu Phe Gln His His Asp Ala Ile Thr
            645   650   655

Gly Thr Ala Lys Glu Ala Val Val Val Asp Tyr Gly Val Arg Leu Leu
            660   665   670

Arg Ser Leu Val Ser Leu Lys Gln Val Ile Ile Asn Ala Ala His Tyr
        675   680   685

Leu Val Leu Gly Asp Lys Glu Thr Tyr Ser Phe Asp Pro Arg Ala Pro
    690   695   700

Phe Leu Gln Met Val Ser Gln Ala Trp Arg Gly Ser Gln Ser Thr Leu
705   710   715   720

His Pro Ser Ala Ala Leu Val Pro Ala Ala Ala Ala Ser Ala Leu Leu
            725   730   735

Pro Gln Arg Ala Pro Arg Phe Val Val Val Phe Asn Pro Leu Glu Gln
          740   745   750

Glu Arg Leu Ser Val Val Ser Leu Leu Val Asn Ser Pro Arg Val Arg
         755   760   765

Val Leu Ser Glu Glu Gly Gln Pro Leu Ser Val Gln Ile Ser Val Gln
        770   775   780

Trp Ser Ser Ala Thr Asn Met Val Pro Asp Val Tyr Gln Val Ser Val
785   790   795   800

Pro Val Arg Leu Pro Ala Leu Gly Leu Gly Val Leu Gln Leu Gln Pro
         805   810   815

Asp Leu Asp Gly Pro Tyr Thr Leu Gln Ser Ser Val His Val Tyr Leu
        820   825   830

Asn Gly Val Lys Leu Ser Val Ser Arg Gln Thr Thr Phe Pro Leu Arg
        835   840   845

Val Val Asp Ser Gly Thr Ser Asp Phe Ala Ile Ser Asn Arg Tyr Met
        850   855   860

Gln Val Trp Phe Ser Gly Leu Thr Gly Leu Leu Lys Ser Val Arg Arg
865   870   875   880

Val Asp Glu Glu Gln Glu Gln Gln Val Asp Met Lys Leu Phe Val Tyr
             885   890   895

Gly Thr Arg Thr Ser Lys Asp Lys Ser Gly Ala Tyr Leu Phe Leu Pro
        900   905   910

Asp Asn Glu Ala Lys Pro Tyr Val Pro Lys Lys Pro Pro Val Leu Arg
        915   920   925

Val Thr Glu Gly Pro Phe Phe Ser Glu Val Ala Ala Tyr Tyr Glu His
        930   935   940

Phe His Gln Val Ile Arg Leu Tyr Asn Leu Pro Gly Val Glu Gly Leu
945   950   955   960

Ser Leu Asp Val Ser Phe Gln Val Asp Ile Arg Asp Tyr Val Asn Lys
            965   970   975

Glu Leu Ala Leu Arg Ile His Thr Asp Ile Asp Ser Gln Gly Thr Phe
        980   985   990

Phe Thr Asp Leu Asn Gly Phe Gln Val Gln Pro Arg Lys Tyr Leu Lys
        995   1000   1005

Lys Leu Pro Leu Gln Ala Asn Phe Tyr Pro Met Pro Val Met Ala Tyr
   1010   1015   1020

Ile Gln Asp Ser Gln Arg Arg Leu Thr Leu His Thr Ala Gln Ala Leu
1025   1030   1035   1040

Gly Val Ser Ser Leu Gly Asn Gly Gln Leu Glu Val Ile Leu Asp Arg
        1045   1050   1055

Arg Leu Met Gln Asp Asp Asn Arg Gly Leu Gly Gln Gly Leu Lys Asp
      1060   1065   1070

Asn Lys Ile Thr Cys Asn His Phe Arg Leu Leu Leu Glu Arg Arg Thr
    1075   1080   1085

Leu Met Ser Pro Glu Val Gln Gln Glu Arg Ser Thr Ser Tyr Pro Ser
   1090   1095   1100

Leu Leu Ser His Met Thr Ser Met Tyr Leu Asn Thr Pro Pro Leu Val
1105   1110   1115   1120

Leu Pro Val Ala Lys Arg Glu Ser Thr Ser Pro Thr Leu His Ser Phe
        1125   1130   1135

His Pro Leu Ala Ser Pro Leu Pro Cys Asp Phe His Leu Leu Asn Leu
      1140   1145   1150

Arg Met Leu Pro Ala Glu Val Ser Val Pro Val Arg Ala Asn Pro His
      1155   1160   1165

His Gln Ala Glu Pro Cys Leu Leu Gly Arg His Ala Ala Asp Pro Pro
    1170   1175   1180

Pro Leu Leu Ser Leu Thr Val Phe Gln Asp Thr Leu Pro Ala Ala Asp
1185   1190   1195   1200

Ala Ala Leu Ile Leu His Arg Lys Gly Phe Asp Cys Gly Leu Glu Ala
        1205   1210   1215

Lys Asn Leu Gly Phe Asn Cys Thr Thr Ser Gln Gly Lys Leu Ala Leu
      1220   1225   1230

Gly Ser Leu Phe His Gly Leu Asp Val Leu Phe Leu Gln Pro Thr Ser
      1235   1240   1245

Leu Thr Leu Leu Tyr Pro Leu Ala Ser Pro Ser Asn Ser Thr Asp Ile
    1250   1255   1260

Ser Leu Glu Pro Met Glu Ile Ser Thr Phe Arg Leu Arg Leu Gly
1265   1270   1275

<210> 94
<211> 1149
<212> PRT
<213> Ciona intestinalis

<400> 94
Met Lys Leu Lys Arg Gln Phe Leu Phe Phe Gly Gly Ile Leu Phe Phe
1   5   10   15

Gly Ser Ile Trp Phe Met Ile Gly Gln Leu Asp Thr Pro Asn Ser Pro
            20   25   30

Gln Lys Val Lys Phe Ser Glu Gly Ser Glu Asn Asp Gln Val Arg Thr
        35   40   45

Leu Gln Asp Lys Leu Ser Leu Val Glu Lys Glu Leu Leu Glu Asn Arg
    50   55   60

Lys Ile Met His Lys Val Lys Asp Ser Leu Gln Asp Met Thr Pro Met
65   70   75   80

Lys Asn Val His Val Pro Met Gln Arg Gly Glu Ile Arg Asn Asn Val
                85   90   95

Asn Lys Pro Val Leu Pro Leu Ile Met Pro Lys Gln Phe Ala Asn Asp
            100   105   110

Ser Arg Met Ser Asp Thr Cys Pro Val Leu Ser Tyr Ser Gly Gly Lys
        115   120   125

Ser Asp Val Asn Met Ile Asn Val Tyr Asp His Leu Pro Phe Asp Asp
    130   135   140

Pro Asp Gly Gly Val Trp Lys Gln Gly Trp Asp Ile Gln Thr Ser Asp
145   150   155   160

Gln Glu Trp Ala Gly Arg Lys Leu Lys Val Phe Ile Val Pro His Ser
                165   170   175

His Asn Asp Pro Gly Trp Leu Lys Thr Val Glu Arg Tyr Phe Ser Asp
            180   185   190

Gln Thr Gln His Ile Leu Asn Asn Ile Val Asp Ala Leu Ser Gln Asp
        195   200   205

Pro Ala Arg Lys Phe Ile Trp Ala Glu Met Ser Tyr Leu Ser Met Trp
    210   215   220

Trp Asp Ile Ala Thr Pro Asp Arg Lys Gln Lys Met Gln Thr Leu Val
225   230   235   240

Lys Asn Gly Gln Leu Glu Ile Val Thr Gly Gly Trp Val Met Asn Asp
            245   250   255

Glu Ala Asn Thr His Tyr Phe Ala Met Ile Asp Gln Leu Ile Glu Gly
   260   265   270

Met Glu Trp Leu Arg Arg Thr Leu Asn Val Val Pro Lys Ser Gly Trp
   275   280   285

Ala Ile Asp Pro Phe Gly His Thr Pro Thr Met Ala Tyr Ile Leu Lys
  290   295   300

Gln Met Lys Phe Lys Asn Met Leu Ile Gln Arg Val His Tyr Ala Val
305   310   315   320

Lys Lys Tyr Leu Ala Gln Glu Lys Ser Leu Glu Phe Arg Trp Arg Gln
    325   330   335

Met Trp Asp Ser Ala Ser Ser Thr Asp Met Met Cys His Leu Met Pro
    340   345   350

Phe Tyr Ser Tyr Asp Val Pro His Thr Cys Gly Pro Asp Pro Lys Ile
   355   360   365

Cys Cys Gln Phe Asp Phe Ala Arg Leu Pro Gly Gly Lys Ile Thr Cys
  370   375   380

Pro Trp Lys Val Pro Pro Val Ala Ile Thr Asp Ser Asn Val Glu Thr
385   390   395   400

Arg Ala Gly Ile Leu Leu Asp Gln Tyr Arg Lys Lys Ser Lys Leu Phe
    405   410   415

Lys Ser Asp Thr Leu Leu Ile Ile Leu Gly Asp Asp Phe Arg Tyr Ser
    420   425   430

Leu Ser Lys Glu Thr Asn Asp Gln Phe Asp Asn Tyr Ala Arg Ile Ile
    435   440   445

Ser Tyr Val Asn Ser His Pro Glu Leu Asn Ala Lys Leu Gln Phe Gly
  450   455   460

Thr Leu Ser Glu Tyr Phe Asp Ala Met Lys Ser Glu Val Gly Gly Glu
465   470   475   480

Glu Lys Leu Pro Ala Leu Ser Gly Asp Phe Phe Thr Tyr Ala Asp Arg
    485   490   495

Glu Asp His Tyr Trp Ser Gly Tyr Tyr Thr Ser Arg Pro Tyr His Lys
    500   505   510

Met Gln Glu Arg Val Leu Glu Ser His Leu Arg Gly Ala Glu Met Leu
   515   520   525

Phe Ala Leu Ser Trp Pro Lys Ile Gln Trp Thr Gly Leu Gly Glu Thr
  530   535   540

Phe Ser His Glu Leu Tyr Pro Leu Leu Val Gln Ala Arg Gln Asn Leu
545   550   555   560

Gly Leu Phe Gln His His Asp Gly Ile Thr Gly Thr Ala Lys Asp His
                565   570   575

Val Val Val Asp Tyr Gly Asn Lys Leu Met Lys Ser Val Met Asp Ala
                580   585   590

Lys Lys Val Ile Ser Tyr Ser Ala Gln Val Leu Leu Gln Glu Met Ile
                595   600   605

Thr Phe Asp Pro Asn Thr Met Val Leu Asn Tyr Asp Glu Val Tyr Gln
    610   615   620

Ala Gln Asn Gln Gln Pro Ala Pro Val Val Val Lys Leu Pro Thr Lys
625   630   635   640

Asn Glu Glu Ala Arg Lys Val Val Leu Tyr Asn Ser Leu Asp Tyr Asp
                645   650   655

Arg Thr Gly Val Val Arg Leu Ile Val Thr Ser Pro Asp Val Val Val
                660   665   670

Met Ser Glu Asn Lys Asn Val Val Pro Ser Gln Thr Ser Pro Ile Trp
            675   680   685

Ser Asp Ser Thr Glu Ile Arg Thr Asp Gln Phe Glu Leu Val Phe Leu
    690   695   700

Ser Thr Val Pro Ala Ile Gly Leu Ala Val Tyr Lys Ile Trp Glu Asp
705   710   715   720

Asn Asp Val Ala Asp Thr Thr His Ser Thr Val Lys Phe Ile Asn Pro
                725   730   735

Arg Val Gly Phe Ser Lys Arg Thr Arg Ser Lys Phe Val Leu Asp Val
                740   745   750

Glu Asp Ser Gly Glu Phe Thr Ile Met Asn Asp Gln Leu Val Ala His
    755   760   765

Phe Ser Gly Gln Asn Gly Met Leu Gln Ser Val Thr Thr Val Arg Asp
    770   775   780

Asn Val Lys Thr Gln Leu Gly Ile Glu Phe Val Ala Tyr Thr Ser Arg
785   790   795   800

Asn Lys Lys Asp Lys Ser Gly Ala Tyr Leu Phe Leu Pro Ala Gly Pro
                805   810   815

Ala Gln Pro His Val Thr Glu Ser His Arg Pro Leu Val Arg Ile Ile
            820   825   830

Arg Gly Pro Val Met Ser Thr Val His Val Leu Leu Pro Asn Val Leu
        835   840   845

His Lys Val Thr Leu Tyr Thr Gly Thr Gly Ala Gly Thr Gln Ser Leu
        850   855   860

Gly Val His Val Ser Asn Asp Val Asp Val Arg Thr Gly Tyr Asp Asn
865   870   875   880

Lys Glu Leu Ser Met Arg Leu Asn Ser Glu Val Leu Ser Gly Ser Lys
                885   890   895

Phe Phe Thr Asp Leu Asn Gly Phe Gln Ile Gln Pro Arg Thr Thr Tyr
            900   905   910

Ser Lys Leu Pro Leu Gln Ala Asn Phe Tyr Pro Ile Pro Thr Met Ala
        915   920   925

Phe Ile Gln Asp Glu Lys Ser Arg Leu Thr Leu Met Thr Ala Gln Pro
    930   935   940

Leu Gly Val Ala Ser Leu Lys Ser Gly Gln Leu Glu Val Val Leu Asp
945   950   955   960

Arg Arg Leu Met Gln Asp Asp Asn Arg Gly Val Gly Gln Gly Val Lys
                965   970   975

Asp Asn Leu Pro Thr Pro Glu Ser Phe Val Ile Met Leu Glu Arg Trp
            980   985   990

Thr Ala Ile Ala Ala Lys Glu Ser Lys Ser Ser Ala Lys Leu Ala Tyr
        995   1000   1005

Pro Ser Met Ala Val Tyr Gln Ser Ser Trp Glu Leu Leu His Pro Ile
    1010   1015   1020

Arg Pro Met Ser Val Asn Gly Pro Val His Leu Lys Glu Asp Tyr Arg
1025   1030   1035   1040

Ser Leu Pro Gln Pro Leu Pro Cys Asp Val His Val Leu Asn Leu Arg
            1045   1050   1055

Ala Ile His Ser Lys Asp Ala Val Ala Pro Thr Asp Gln Ser Ala Leu
        1060   1065   1070

Leu Leu His Thr Val Gly Arg Glu Cys Ser Leu Asp Ala Asp Lys Tyr
    1075   1080   1085

Phe His Pro Thr Cys Leu Met His Gly Val Glu Lys Leu Ala Ile Thr
    1090   1095   1100

Ile Ser Thr Leu Phe Thr Asn Ser Gly Met Arg Lys Thr Ser Leu Ser
1105   1110   1115   1120

Leu Gln His Asp Gly Ser Leu Leu Asp Asn Gln Gly Gly Ile Thr Val
                1125   1130   1135

Ser Pro Met Glu Ile Gln Ala Tyr Lys Ile Val Leu Thr
            1140   1145

<210> 95
<211> 1173
<212> PRT
<213> Arabidopsis thaliana

<400> 95
Met Pro Phe Ser Ser Tyr Ile Gly Asn Ser Arg Arg Ser Ser Thr Gly
  1   5   10   15

Gly Gly Thr Gly Gly Trp Gly Gln Ser Leu Leu Pro Thr Ala Leu Ser
            20   25   30

Lys Ser Lys Leu Ala Ile Asn Arg Lys Pro Arg Lys Arg Thr Leu Val
        35   40   45

Val Asn Phe Ile Phe Ala Asn Phe Phe Val Ile Ala Leu Thr Val Ser
    50   55   60

Leu Leu Phe Phe Leu Leu Thr Leu Phe His Phe Gly Val Pro Gly Pro
65   70   75   80

Ile Ser Ser Arg Phe Leu Thr Ser Arg Ser Asn Arg Ile Val Lys Pro
                85   90   95

Arg Lys Asn Ile Asn Arg Arg Pro Leu Asn Asp Ser Asn Ser Gly Ala
            100   105   110

Val Val Asp Ile Thr Thr Lys Asp Leu Tyr Asp Arg Ile Glu Phe Leu
        115   120   125

Asp Thr Asp Gly Gly Pro Trp Lys Gln Gly Trp Arg Val Thr Tyr Lys
    130   135   140

Asp Asp Glu Trp Glu Lys Glu Lys Leu Lys Ile Phe Val Val Pro His
145   150   155   160

Ser His Asn Asp Pro Gly Trp Lys Leu Thr Val Glu Glu Tyr Tyr Gln
                165   170   175

Arg Gln Ser Arg His Ile Leu Asp Thr Ile Val Glu Thr Leu Ser Lys
            180   185   190

Asp Ser Arg Arg Lys Phe Ile Trp Glu Glu Met Ser Tyr Leu Glu Arg
            195   200   205

Trp Trp Arg Asp Ala Ser Pro Asn Lys Gln Glu Ala Leu Thr Lys Leu
    210   215   220

Val Lys Asp Gly Gln Leu Glu Ile Val Gly Gly Gly Trp Val Met Asn
225   230   235   240

Asp Glu Ala Asn Ser His Tyr Phe Ala Ile Ile Glu Gln Ile Ala Glu
                245   250   255

Gly Asn Met Trp Leu Asn Asp Thr Ile Gly Val Ile Pro Lys Asn Ser
            260   265   270

Trp Ala Ile Asp Pro Phe Gly Tyr Ser Ser Thr Met Ala Tyr Leu Leu
        275   280   285

Arg Arg Met Gly Phe Glu Asn Met Leu Ile Gln Arg Thr His Tyr Glu
    290   295   300

Leu Lys Lys Asp Leu Ala Gln His Lys Asn Leu Glu Tyr Ile Trp Arg
305   310   315   320

Gln Ser Trp Asp Ala Met Glu Thr Thr Asp Ile Phe Val His Met Met
            325   330   335

Pro Phe Tyr Ser Tyr Asp Ile Pro His Thr Cys Gly Pro Glu Pro Ala
            340   345   350

Ile Cys Cys Gln Phe Asp Phe Ala Arg Met Arg Gly Phe Lys Tyr Glu
        355   360   365

Leu Cys Pro Trp Gly Lys His Pro Val Glu Thr Thr Leu Glu Asn Val
    370   375   380

Gln Glu Arg Ala Leu Lys Leu Leu Asp Gln Tyr Arg Lys Lys Ser Thr
385   390   395   400

Leu Tyr Arg Thr Asn Thr Leu Leu Ile Pro Leu Gly Asp Asp Phe Arg
                405   410   415

Tyr Ile Ser Ile Asp Glu Ala Glu Ala Gln Phe Arg Asn Tyr Gln Met
            420   425   430

Leu Phe Asp His Ile Asn Ser Asn Pro Ser Leu Asn Ala Glu Ala Lys
        435   440   445

Phe Gly Thr Leu Glu Asp Tyr Phe Arg Thr Val Arg Glu Glu Ala Asp
    450   455   460

Arg Val Asn Tyr Ser Arg Pro Gly Glu Val Gly Ser Gly Gln Val Val
465   470   475   480

Gly Phe Pro Ser Leu Ser Gly Asp Phe Phe Thr Tyr Ala Asp Arg Gln
            485   490   495

Gln Asp Tyr Trp Ser Gly Tyr Tyr Val Ser Arg Pro Phe Phe Lys Ala
        500   505   510

Val Asp Arg Val Leu Glu His Thr Leu Arg Gly Ala Glu Ile Met Met
        515   520   525

Ser Phe Leu Leu Gly Tyr Cys His Arg Ile Gln Cys Glu Lys Phe Pro
        530   535   540

Thr Ser Phe Thr Tyr Lys Leu Thr Ala Ala Arg Arg Asn Leu Ala Leu
545   550   555   560

Phe Gln His His Asp Gly Val Thr Gly Thr Ala Lys Asp Tyr Val Val
                565   570   575

Gln Asp Tyr Gly Thr Arg Met His Thr Ser Leu Gln Asp Leu Gln Ile
            580   585   590

Phe Met Ser Lys Ala Ile Glu Val Leu Leu Gly Ile Arg His Glu Lys
            595   600   605

Glu Lys Ser Asp Gln Ser Pro Ser Phe Phe Glu Ala Glu Gln Met Arg
    610   615   620

Ser Lys Tyr Asp Ala Arg Pro Val His Lys Pro Ile Ala Ala Arg Glu
625   630   635   640

Gly Asn Ser His Thr Val Ile Leu Phe Asn Pro Ser Glu Gln Thr Arg
                645   650   655

Glu Glu Val Val Thr Val Val Val Asn Arg Ala Glu Ile Ser Val Leu
            660   665   670

Asp Ser Asn Trp Thr Cys Val Pro Ser Gln Ile Ser Pro Glu Val Gln
            675   680   685

His Asp Asp Thr Lys Leu Phe Thr Gly Arg His Arg Leu Tyr Trp Lys
    690   695   700

Ala Ser Ile Pro Ala Leu Gly Leu Arg Thr Tyr Phe Ile Ala Asn Gly
705   710   715   720

Asn Val Glu Cys Glu Lys Ala Thr Pro Ser Lys Leu Lys Tyr Ala Ser
                725   730   735

Glu Phe Asp Pro Phe Pro Cys Pro Pro Tyr Ser Cys Ser Lys Leu
            740   745   750

Asp Asn Asp Val Thr Glu Ile Arg Asn Glu His Gln Thr Leu Val Phe
            755   760   765

Asp Val Lys Asn Gly Ser Leu Arg Lys Ile Val His Arg Asn Gly Ser
    770   775   780

Glu Thr Val Val Gly Glu Glu Ile Gly Met Tyr Ser Ser Pro Glu Ser
785   790   795   800

Gly Ala Tyr Leu Phe Lys Pro Asp Gly Glu Ala Gln Pro Ile Val Gln
            805   810   815

Pro Asp Gly His Val Val Thr Ser Glu Gly Leu Leu Val Gln Glu Val
            820   825   830

Phe Ser Tyr Pro Lys Thr Lys Trp Glu Lys Ser Pro Leu Ser Gln Lys
            835   840   845

Thr Arg Leu Tyr Thr Gly Gly Asn Thr Leu Gln Asp Gln Val Val Glu
            850   855   860

Ile Glu Tyr His Val Glu Leu Leu Gly Asn Asp Phe Asp Asp Arg Glu
865   870   875   880

Leu Ile Val Arg Tyr Lys Thr Asp Val Asp Asn Lys Lys Val Phe Tyr
            885   890   895

Ser Asp Leu Asn Gly Phe Gln Met Ser Arg Arg Glu Thr Tyr Asp Lys
            900   905   910

Ile Pro Leu Gln Gly Asn Tyr Tyr Pro Met Pro Ser Leu Ala Phe Ile
            915   920   925

Gln Gly Ser Asn Gly Gln Arg Phe Ser Val His Ser Arg Gln Ser Leu
            930   935   940

Gly Val Ala Ser Leu Lys Glu Gly Trp Leu Glu Ile Met Leu Asp Arg
945   950   955   960

Arg Leu Val Arg Asp Asp Gly Arg Gly Leu Gly Gln Gly Val Met Asp
            965   970   975

Asn Arg Ala Met Thr Val Val Phe His Leu Leu Ala Glu Ser Asn Ile
            980   985   990

Ser Gln Ala Asp Pro Ala Ser Asn Thr Asn Pro Arg Asn Pro Ser Leu
            995   1000   1005

Leu Ser His Leu Ile Gly Ala His Leu Asn Tyr Pro Ile Asn Thr Phe
            1010   1015   1020

Ile Ala Lys Lys Pro Gln Asp Ile Ser Val Arg Val Pro Gln Tyr Gly
1025   1030   1035   1040

Ser Phe Ala Pro Leu Ala Lys Pro Leu Pro Cys Asp Leu His Ile Val
            1045   1050   1055

Asn Phe Lys Val Pro Arg Pro Ser Lys Tyr Ser Gln Gln Leu Glu Glu
            1060   1065   1070

Asp Lys Pro Arg Phe Ala Leu Ile Leu Asn Arg Arg Ala Trp Asp Ser
    1075   1080   1085

Ala Tyr Cys His Lys Gly Arg Gln Val Asn Cys Thr Ser Met Ala Asn
  1090   1095   1100

Glu Pro Val Asn Phe Ser Asp Met Phe Lys Asp Leu Ala Ala Ser Lys
1105   1110   1115   1120

Val Lys Pro Thr Ser Leu Asn Leu Leu Gln Glu Asp Met Glu Ile Leu
    1125   1130   1135

Gly Tyr Asp Asp Gln Glu Leu Pro Arg Asp Ser Ser Gln Pro Arg Glu
    1140   1145   1150

Gly Arg Val Ser Ile Ser Pro Met Glu Ile Arg Ala Tyr Lys Leu Glu
    1155   1160   1165

Leu Arg Pro His Lys
    1170

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<211> 1108
<212> PRT
<213> Drosophila sp.

<400> 96
Met Leu Arg Ile Arg Arg Arg Phe Ala Leu Val Ile Cys Ser Gly Cys
  1   5   10   15

Leu Leu Val Phe Leu Ser Leu Tyr Ile Ile Leu Asn Phe Ala Ala Pro
      20   25   30

Ala Ala Thr Gln Ile Lys Pro Asn Tyr Glu Asn Ile Glu Asn Lys Leu
    35   40   45

His Glu Leu Glu Asn Gly Leu Gln Glu His Gly Glu Glu Met Arg Asn
    50   55   60

Leu Arg Ala Arg Leu Ala Lys Thr Ser Asn Arg Asp Asp Pro Ile Arg
65   70   75   80

Pro Pro Leu Lys Val Ala Arg Ser Pro Arg Pro Gly Gln Cys Gln Asp
      85   90   95

Val Val Gln Asp Val Pro Asn Val Asp Val Gln Met Leu Glu Leu Tyr
      100   105   110

Asp Arg Met Ser Phe Lys Asp Ile Asp Gly Gly Val Trp Lys Gln Gly
    115   120   125

Trp Asn Ile Lys Tyr Asp Pro Leu Lys Tyr Asn Ala His His Lys Leu
   130   135   140

Lys Val Phe Val Val Pro His Ser His Asn Asp Pro Gly Trp Ile Gln
145   150   155   160

Thr Phe Glu Glu Tyr Tyr Gln His Asp Thr Lys His Ile Leu Ser Asn
          165   170   175

Ala Leu Arg His Leu His Asp Asn Pro Glu Met Lys Phe Ile Trp Ala
         180   185   190

Glu Ile Ser Tyr Phe Ala Arg Phe Tyr His Asp Leu Gly Glu Asn Lys
      195   200   205

Lys Leu Gln Met Lys Ser Ile Val Lys Asn Gly Gln Leu Glu Phe Val
   210   215   220

Thr Gly Gly Trp Val Met Pro Asp Glu Ala Asn Ser His Trp Arg Asn
225   230   235   240

Val Leu Leu Gln Leu Thr Glu Gly Gln Thr Trp Leu Lys Gln Phe Met
         245   250   255

Asn Val Thr Pro Thr Ala Ser Trp Ala Ile Asp Pro Phe Gly His Ser
         260   265   270

Pro Thr Met Pro Tyr Ile Leu Gln Lys Ser Gly Phe Lys Asn Met Leu
      275   280   285

Ile Gln Arg Thr His Tyr Ser Val Lys Lys Glu Leu Ala Gln Gln Arg
   290   295   300

Gln Leu Glu Phe Leu Trp Arg Gln Ile Trp Asp Asn Lys Gly Asp Thr
305   310   315   320

Ala Leu Phe Thr His Met Met Pro Phe Tyr Ser Tyr Asp Ile Pro His
         325   330   335

Thr Cys Gly Pro Asp Pro Lys Val Cys Cys Gln Phe Asp Phe Lys Arg
         340   345   350

Met Gly Ser Phe Gly Leu Ser Cys Pro Trp Lys Val Pro Pro Arg Thr
         355   360   365

Ile Ser Asp Gln Asn Val Ala Ala Arg Ser Asp Leu Leu Val Asp Gln
   370   375   380

Trp Lys Lys Lys Ala Glu Leu Tyr Arg Thr Asn Val Leu Leu Ile Pro
385   390   395   400

Leu Gly Asp Asp Phe Arg Phe Lys Gln Asn Thr Glu Trp Asp Val Gln
         405   410   415

Arg Val Asn Tyr Glu Arg Leu Phe Glu His Ile Asn Ser Gln Ala His
        420   425   430

Phe Asn Val Gln Ala Gln Phe Gly Thr Leu Gln Glu Tyr Phe Asp Ala
        435   440   445

Val His Gln Ala Glu Arg Ala Gly Gln Ala Glu Phe Pro Thr Leu Ser
    450   455   460

Gly Asp Phe Phe Thr Tyr Ala Asp Arg Ser Asp Asn Tyr Trp Ser Gly
465   470   475   480

Tyr Tyr Thr Ser Arg Pro Tyr His Lys Arg Met Asp Arg Val Leu Met
            485   490   495

His Tyr Val Arg Ala Ala Glu Met Leu Ser Ala Trp His Ser Trp Asp
            500   505   510

Gly Met Ala Arg Ile Glu Glu Arg Leu Glu Gln Ala Arg Arg Glu Leu
        515   520   525

Ser Leu Phe Gln His His Asp Gly Ile Thr Gly Thr Ala Lys Thr His
    530   535   540

Val Val Val Asp Tyr Glu Gln Arg Met Gln Glu Ala Leu Lys Ala Cys
545   550   555   560

Gln Met Val Met Gln Gln Ser Val Tyr Arg Leu Leu Thr Lys Pro Ser
            565   570   575

Ile Tyr Ser Pro Asp Phe Ser Phe Ser Tyr Phe Thr Leu Asp Asp Ser
            580   585   590

Arg Trp Pro Gly Ser Gly Val Glu Asp Ser Arg Thr Thr Ile Ile Leu
        595   600   605

Gly Glu Asp Ile Leu Pro Ser Lys His Val Val Met His Asn Thr Leu
    610   615   620

Pro His Trp Arg Glu Gln Leu Val Asp Phe Tyr Val Ser Ser Pro Phe
625   630   635   640

Val Ser Val Thr Asp Leu Ala Asn Asn Pro Val Glu Ala Gln Val Ser
            645   650   655

Pro Val Trp Ser Trp His His Asp Thr Leu Thr Lys Thr Ile His Pro
            660   665   670

Gln Gly Ser Thr Thr Lys Tyr Arg Ile Ile Phe Lys Ala Arg Val Pro
        675   680   685

Pro Met Gly Leu Ala Thr Tyr Val Leu Thr Ile Ser Asp Ser Lys Pro
    690   695   700

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Glu His Thr Ser Tyr Ala Ser Asn Leu Leu Leu Arg Lys Asn Pro Thr
705             710             715             720

Ser Leu Pro Leu Gly Gln Tyr Pro Glu Asp Val Lys Phe Gly Asp Pro
            725             730             735

Arg Glu Ile Ser Leu Arg Val Gly Asn Gly Pro Thr Leu Ala Phe Ser
            740             745             750

Glu Gln Gly Leu Leu Lys Ser Ile Gln Leu Thr Gln Asp Ser Pro His
            755             760             765

Val Pro Val His Phe Lys Phe Leu Lys Tyr Gly Val Arg Ser His Gly
    770             775             780

Asp Arg Ser Gly Ala Tyr Leu Phe Leu Pro Asn Gly Pro Ala Ser Pro
785             790             795             800

Val Glu Leu Gly Gln Pro Val Val Leu Val Thr Lys Gly Lys Leu Glu
            805             810             815

Ser Ser Val Ser Val Gly Leu Pro Ser Val Val His Gln Thr Ile Met
            820             825             830

Arg Gly Gly Ala Pro Glu Ile Arg Asn Leu Val Asp Ile Gly Ser Leu
            835             840             845

Asp Asn Thr Glu Ile Val Met Arg Leu Glu Thr His Ile Asp Ser Gly
850             855             860

Asp Ile Phe Tyr Thr Asp Leu Asn Gly Leu Gln Phe Ile Lys Arg Arg
865             870             875             880

Arg Leu Asp Lys Leu Pro Leu Gln Ala Asn Tyr Tyr Pro Ile Pro Ser
            885             890             895

Gly Met Phe Ile Glu Asp Ala Asn Thr Arg Leu Thr Leu Leu Thr Gly
            900             905             910

Gln Pro Leu Gly Gly Ser Ser Leu Ala Ser Gly Glu Leu Glu Ile Met
            915             920             925

Gln Asp Arg Arg Leu Ala Ser Asp Asp Glu Arg Gly Leu Gly Gln Gly
    930             935             940

Val Leu Asp Asn Lys Pro Val Leu His Ile Tyr Arg Leu Val Leu Glu
945             950             955             960

Lys Val Asn Asn Cys Val Arg Pro Ser Lys Leu His Pro Ala Gly Tyr
            965             970             975

Leu Thr Ser Ala Ala His Lys Ala Ser Gln Ser Leu Leu Asp Pro Leu
            980             985             990
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Asp Lys Phe Ile Phe Ala Glu Asn Glu Trp Ile Gly Ala Gln Gly Gln
        995   1000   1005

Phe Gly Gly Asp His Pro Ser Ala Arg Glu Asp Leu Asp Val Ser Val
    1010   1015   1020

Met Arg Arg Leu Thr Lys Ser Ser Ala Lys Thr Gln Arg Val Gly Tyr
1025   1030   1035   1040

Val Leu His Arg Thr Asn Leu Met Gln Cys Gly Thr Pro Glu Glu His
            1045   1050   1055

Thr Gln Lys Leu Asp Val Cys His Leu Leu Pro Asn Val Ala Arg Cys
            1060   1065   1070

Glu Arg Thr Thr Leu Thr Phe Leu Gln Asn Leu Glu His Leu Asp Gly
        1075   1080   1085.

Met Val Ala Pro Glu Val Cys Pro Met Glu Thr Ala Ala Tyr Val Ser
    1090   1095   1100

Ser His Ser Ser
1105

<210> 97
<211> 1144
<212> PRT
<213> Homo sapiens

<400> 97
Met Lys Leu Ser Arg Gln Phe Thr Val Phe Gly Ser Ala Ile Phe Cys
  1   5   10   15

Val Val Ile Phe Ser Leu Tyr Leu Met Leu Asp Arg Gly His Leu Asp
            20   25   30

Tyr Pro Arg Asn Pro Arg Arg Glu Gly Ser Phe Pro Gln Gly Gln Leu
        35   40   45

Ser Met Leu Gln Glu Lys Ile Asp His Leu Glu Arg Leu Leu Ala Glu
    50   55   60

Asn Asn Glu Ile Ile Ser Asn Ile Arg Asp Ser Val Ile Asn Leu Ser
65   70   75   80

Glu Ser Val Glu Asp Gly Pro Lys Ser Ser Gln Ser Asn Phe Ser Gln
                85   90   95

Gly Ala Gly Ser His Leu Leu Pro Ser Gln Leu Ser Leu Ser Val Asp
            100   105   110

Thr Ala Asp Cys Leu Phe Ala Ser Gln Ser Gly Ser His Asn Ser Asp
        115   120   125

Val Gln Met Leu Asp Val Tyr Ser Leu Ile Ser Phe Asp Asn Pro Asp
        130   135   140

Gly Gly Val Trp Lys Gln Gly Phe Asp Ile Thr Tyr Glu Ser Asn Glu
145   150   155   160

Trp Asp Thr Glu Pro Leu Gln Val Phe Val Val Pro His Ser His Asn
            165   170   175   .

Asp Pro Gly Trp Leu Lys Thr Phe Asn Asp Tyr Phe Arg Asp Lys Thr
            180   185   190

Gln Tyr Ile Phe Asn Asn Met Val Leu Lys Leu Lys Glu Asp Ser Arg
        195   200   205

Arg Lys Phe Ile Trp Ser Glu Ile Ser Tyr Leu Ser Lys Trp Trp Asp
    210   215   220

Ile Ile Asp Ile Gln Lys Lys Asp Ala Val Lys Ser Leu Ile Glu Asn
225   230   235   240

Gly Gln Leu Glu Ile Val Thr Gly Gly Trp Val Met Pro Asp Glu Ala
            245   250   255

Thr Pro His Tyr Phe Ala Leu Ile Asp Gln Leu Ile Glu Gly His Gln
            260   265   270

Trp Leu Glu Asn Asn Ile Gly Val Lys Pro Arg Ser Gly Trp Ala Ile
        275   280   285

Asp Pro Phe Gly His Ser Pro Thr Met Ala Tyr Leu Leu Asn Arg Ala
    290   .   295   300

Gly Leu Ser His Met Leu Ile Gln Arg Val His Tyr Ala Val Lys Lys
305   310   315   320

His Phe Ala Leu His Lys Thr Leu Glu Phe Phe Trp Arg Gln Asn Trp
            325   330   335

Asp Leu Gly Ser Val Thr Asp Ile Leu Cys His Met Met Pro Phe Tyr
            340   345   350

Ser Tyr Asp Ile Pro His Thr Cys Gly Pro Asp Pro Lys Ile Cys Cys
        355   360   365

Gln Phe Asp Phe Lys Arg Leu Pro Gly Gly Arg Phe Gly Cys Pro Trp
    370   375   380

Gly Val Pro Pro Glu Thr Ile His Pro Gly Asn Val Gln Ser Arg Ala
385   390   395   400

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Arg Met Leu Leu Asp Gln Tyr Arg Lys Lys Ser Lys Leu Phe Arg Thr
            405   410   415

Lys Val Leu Leu Ala Pro Leu Gly Asp Asp Phe Arg Tyr Cys Glu Tyr
            420   425   430

Thr Glu Trp Asp Leu Gln Phe Lys Asn Tyr Gln Gln Leu Phe Asp Tyr
            435   440   445

Met Asn Ser Gln Ser Lys Phe Lys Val Lys Ile Gln Phe Gly Thr Leu
    450   455   460

Ser Asp Phe Phe Asp Ala Leu Asp Lys Ala Asp Glu Thr Gln Arg Asp
465   470   475   480

Lys Gly Gln Ser Met Phe Pro Val Leu Ser Gly Asp Phe Phe Thr Tyr
                485   490   495

Ala Asp Arg Asp Asp His Tyr Trp Ser Gly Tyr Phe Thr Ser Arg Pro
            500   505   510

Phe Tyr Lys Arg Met Asp Arg Ile Met Glu Ser His Leu Arg Ala Ala
        515   520   525

Glu Ile Leu Tyr Tyr Phe Ala Leu Arg Gln Ala His Lys Tyr Lys Ile
    530   535   540

Asn Lys Phe Leu Ser Ser Ser Leu Tyr Thr Ala Leu Thr Glu Ala Arg
545   550   555   560

Arg Asn Leu Gly Leu Phe Gln His His Asp Ala Ile Thr Gly Thr Ala
                565   570   575

Lys Asp Trp Val Val Val Asp Tyr Gly Thr Arg Leu Phe His Ser Leu
            580   585   590

Met Val Leu Glu Lys Ile Ile Gly Asn Ser Ala Phe Leu Leu Ile Gly
            595   600   605

Lys Asp Lys Leu Thr Tyr Asp Ser Tyr Ser Pro Asp Thr Phe Leu Glu
    610   615   620

Met Asp Leu Lys Gln Lys Ser Gln Asp Ser Leu Pro Gln Lys Asn Ile
625   630   635   640

Ile Arg Leu Ser Ala Glu Pro Arg Tyr Leu Val Val Tyr Asn Pro Leu
                645   650   655

Glu Gln Asp Arg Ile Ser Leu Val Ser Val Tyr Val Ser Ser Pro Thr
            660   665   670

Val Gln Val Phe Ser Ala Ser Gly Lys Pro Val Glu Val Gln Val Ser
        675   680   685

Ala Val Trp Asp Thr Ala Asn Thr Ile Ser Glu Thr Ala Tyr Glu Ile
    690   695   700

Ser Phe Arg Ala His Ile Pro Pro Leu Gly Leu Lys Val Tyr Lys Ile
705   710   715   720

Leu Glu Ser Ala Ser Ser Asn Ser His Leu Ala Asp Tyr Val Leu Tyr
                725   730   735

Lys Asn Lys Val Glu Asp Ser Gly Ile Phe Thr Ile Lys Asn Met Ile
            740   745   750

Asn Thr Glu Glu Gly Ile Thr Leu Glu Asn Ser Phe Val Leu Leu Arg
        755   760   765

Phe Asp Gln Thr Gly Leu Met Lys Gln Met Met Thr Lys Glu Asp Gly
    770   775   780

Lys His His Glu Val Asn Val Gln Phe Ser Trp Tyr Gly Thr Thr Ile
785   790   795   800

Lys Arg Asp Lys Ser Gly Ala Tyr Leu Phe Leu Pro Asp Gly Asn Ala
            805   810   815

Lys Pro Tyr Val Tyr Thr Thr Pro Pro Phe Val Arg Val Thr His Gly
            820   825   830

Arg Ile Tyr Ser Glu Val Thr Cys Phe Phe Asp His Val Thr His Arg
        835   840   845

Val Arg Leu Tyr His Ile Gln Gly Ile Glu Gly Gln Ser Val Glu Val
    850   855   860

Ser Asn Ile Val Asp Ile Arg Lys Val Tyr Asn Arg Glu Ile Ala Met
865   870   875   880

Lys Ile Ser Ser Asp Ile Lys Ser Gln Asn Arg Phe Tyr Thr Asp Leu
                885   890   895

Asn Gly Tyr Gln Ile Gln Pro Arg Met Thr Leu Ser Lys Leu Pro Leu
            900   905   910

Gln Ala Asn Val Tyr Pro Met Thr Thr Met Ala Tyr Ile Gln Asp Ala
            915   920   925

Lys His Arg Leu Thr Leu Leu Ser Ala Gln Ser Leu Gly Val Ser Ser
    930   935   940

Leu Asn Ser Gly Gln Ile Glu Val Ile Met Asp Arg Arg Leu Met Gln
945   950   955   960

Asp Asp Asn Arg Gly Leu Glu Gln Gly Ile Gln Asp Asn Lys Ile Thr
            965   970   975

Ala Asn Leu Phe Arg Ile Leu Leu Glu Lys Arg Ser Ala Val Asn Thr
       980   985   990

Glu Glu Glu Lys Lys Ser Val Ser Tyr Pro Ser Leu Leu Ser His Ile
      995   1000   1005

Thr Ser Ser Leu Met Asn His Pro Val Ile Pro Met Ala Asn Lys Phe
   1010   1015   1020

Ser Ser Pro Thr Leu Glu Leu Gln Gly Glu Phe Ser Pro Leu Gln Ser
1025   1030   1035   1040

Ser Leu Pro Cys Asp Ile His Leu Val Asn Leu Arg Thr Ile Gln Ser
         1045   1050   1055

Lys Val Gly Asn Gly His Ser Asn Glu Ala Ala Leu Ile Leu His Arg
       1060   1065   1070

Lys Gly Phe Asp Cys Arg Phe Ser Ser Lys Gly Thr Gly Leu Phe Cys
     1075   1080   1085

Ser Thr Thr Gln Gly Lys Ile Leu Val Gln Lys Leu Leu Asn Lys Phe
   1090   1095   1100

Ile Val Glu Ser Leu Thr Pro Ser Ser Leu Ser Leu Met His Ser Pro
1105   1110   1115   1120

Pro Gly Thr Gln Asn Ile Ser Glu Ile Asn Leu Ser Pro Met Glu Ile
         1125   1130   1135

Ser Thr Phe Arg Ile Gln Leu Arg
      1140

<210> 98
<211> 1150
<212> PRT
<213> Mus musculus

<400> 98
Met Lys Leu Ser Arg Gln Phe Thr Val Phe Gly Ser Ala Ile Phe Cys
  1   5   10   15

Val Val Ile Phe Ser Leu Tyr Leu Met Leu Asp Arg Gly His Leu Asp
        20   25   30

Tyr Pro Arg Gly Pro Arg Gln Glu Gly Ser Phe Pro Gln Gly Gln Leu
     35   40   45

Ser Ile Leu Gln Glu Lys Ile Asp His Leu Glu Arg Leu Leu Ala Glu
   50   55   60

Asn Asn Glu Ile Ile Ser Asn Ile Arg Asp Ser Val Ile Asn Leu Ser
 65   70   75   80

Glu Ser Val Glu Asp Gly Pro Arg Gly Ser Pro Gly Asn Ala Ser Gln
             85   90   95

Gly Ser Ile His Leu His Ser Pro Gln Leu Ala Leu Gln Ala Asp Pro
         100   105   110

Arg Asp Cys Leu Phe Ala Ser Gln Ser Gly Ser Gln Pro Arg Asp Val
         115   120   125

Gln Met Leu Asp Val Tyr Asp Leu Ile Pro Phe Asp Asn Pro Asp Gly
     130   135   140

Gly Val Trp Lys Gln Gly Phe Asp Ile Lys Tyr Glu Ala Asp Glu Trp
145   150   155   160

Asp His Glu Pro Leu Gln Val Phe Val Val Pro His Ser His Asn Asp
             165   170   175

Pro Gly Trp Leu Lys Thr Phe Asn Asp Tyr Phe Arg Asp Lys Thr Gln
         180   185   190

Tyr Ile Phe Asn Asn Met Val Leu Lys Leu Lys Glu Asp Ser Ser Arg
         195   200   205

Lys Phe Met Trp Ser Glu Ile Ser Tyr Leu Ala Lys Trp Trp Asp Ile
     210   215   220

Ile Asp Ile Pro Lys Lys Glu Ala Val Lys Ser Leu Leu Gln Asn Gly
225   230   235   240

Gln Leu Glu Ile Val Thr Gly Gly Trp Val Met Pro Asp Glu Ala Thr
             245   250   255

Pro His Tyr Phe Ala Leu Ile Asp Gln Leu Ile Glu Gly His Gln Trp
         260   265   270

Leu Glu Lys Asn Leu Gly Val Lys Pro Arg Ser Gly Trp Ala Ile Asp
     275   280   285

Pro Phe Gly His Ser Pro Thr Met Ala Tyr Leu Leu Lys Arg Ala Gly
     290   295   300

Phe Ser His Met Leu Ile Gln Arg Val His Tyr Ala Ile Lys Lys His
305   310   315   320

Phe Ser Leu His Lys Thr Leu Glu Phe Phe Trp Arg Gln Asn Trp Asp
             325   330   335

Leu Gly Ser Ala Thr Asp Ile Leu Cys His Met Met Pro Phe Tyr Ser
         340   345   350

Tyr Asp Ile Pro His Thr Cys Gly Pro Asp Pro Lys Ile Cys Cys Gln
    355   360   365

Phe Asp Phe Lys Arg Leu Pro Gly Gly Arg Tyr Gly Cys Pro Trp Gly
    370   375   380

Val Pro Pro Glu Ala Ile Ser Pro Gly Asn Val Gln Ser Arg Ala Gln
385   390   395   400

Met Leu Leu Asp Gln Tyr Arg Lys Lys Ser Lys Leu Phe Arg Thr Lys
          405   410   415

Val Leu Leu Ala Pro Leu Gly Asp Asp Phe Arg Phe Ser Glu Tyr Thr
          420   425   430

Glu Trp Asp Leu Gln Cys Arg Asn Tyr Glu Gln Leu Phe Ser Tyr Met
      435   440   445

Asn Ser Gln Pro His Leu Lys Val Lys Ile Gln Phe Gly Thr Leu Ser
    450   455   460

Asp Tyr Phe Asp Ala Leu Glu Lys Ala Val Ala Ala Glu Lys Lys Ser
465   470   475   480

Ser Gln Ser Val Phe Pro Ala Leu Ser Gly Asp Phe Phe Thr Tyr Ala
          485   490   495

Asp Arg Asp Asp His Tyr Trp Ser Gly Tyr Phe Thr Ser Arg Pro Phe
          500   505   510

Tyr Lys Arg Met Asp Arg Ile Met Glu Ser Arg Ile Arg Ala Ala Glu
          515   520   525

Ile Leu Tyr Gln Leu Ala Leu Lys Gln Ala Gln Lys Tyr Lys Ile Asn
    530   535   540

Lys Phe Leu Ser Ser Pro His Tyr Thr Thr Leu Thr Glu Ala Arg Arg
545   550   555   560

Asn Leu Gly Leu Phe Gln His His Asp Ala Ile Thr Gly Thr Ala Lys
          565   570   575

Asp Trp Val Val Val Asp Tyr Gly Thr Arg Leu Phe Gln Ser Leu Asn
          580   585   590

Ser Leu Glu Lys Ile Ile Gly Asp Ser Ala Phe Leu Leu Ile Leu Lys
      595   600   605

Asp Lys Lys Leu Tyr Gln Ser Asp Pro Ser Lys Ala Phe Leu Glu Met
    610   615   620

Asp Thr Lys Gln Ser Ser Gln Asp Ser Leu Pro Gln Lys Ile Ile Ile
625   630   635   640

Gln Leu Ser Ala Gln Glu Pro Arg Tyr Leu Val Val Tyr Asn Pro Phe
            645   650   655

Glu Gln Glu Arg His Ser Val Val Ser Ile Arg Val Asn Ser Ala Thr
            660   665   670

Gly Lys Val Leu Ser Asp Ser Gly Lys Pro Val Glu Val Gln Val Ser
            675   680   685

Ala Val Trp Asn Asp Met Arg Thr Ile Ser Gln Ala Ala Tyr Glu Val
            690   695   700

Ser Phe Leu Ala His Ile Pro Pro Leu Gly Leu Lys Val Phe Lys Ile
705   710   715   720

Leu Glu Ser Gln Ser Ser Ser Ser His Leu Ala Asp Tyr Val Leu Tyr
            725   730   735

Asn Asn Asp Gly Leu Ala Glu Asn Gly Ile Phe His Val Lys Asn Met
            740   745   750

Val Asp Ala Gly Asp Ala Ile Thr Ile Glu Asn Pro Phe Leu Ala Ile
            755   760   765

Trp Phe Asp Arg Ser Gly Leu Met Glu Lys Val Arg Arg Lys Glu Asp
            770   775   780

Ser Arg Gln His Glu Leu Lys Val Gln Phe Leu Trp Tyr Gly Thr Thr
785   790   795   800

Asn Lys Arg Asp Lys Ser Gly Ala Tyr Leu Phe Leu Pro Asp Gly Gln
            805   810   815

Gly Gln Pro Tyr Val Ser Leu Arg Pro Pro Phe Val Arg Val Thr Arg
            820   825   830

Gly Arg Ile Tyr Ser Asp Val Thr Cys Phe Leu Glu His Val Thr His
            835   840   845

Lys Val Arg Leu Tyr Asn Ile Gln Gly Ile Glu Gly Gln Ser Met Glu
            850   855   860

Val Ser Asn Ile Val Asn Ile Arg Asn Val His Asn Arg Glu Ile Val
865   870   875   880

Met Arg Ile Ser Ser Lys Ile Asn Asn Gln Asn Arg Tyr Tyr Thr Asp
            885   890   895

Leu Asn Gly Tyr Gln Ile Gln Pro Arg Arg Thr Met Ser Lys Leu Pro
            900   905   910

Leu Gln Ala Asn Val Tyr Pro Met Cys Thr Met Ala Tyr Ile Gln Asp
            915   920   925

Ala Glu His Arg Leu Thr Leu Leu Ser Ala Gln Ser Leu Gly Ala Ser
    930   935   940

Ser Met Ala Ser Gly Gln Ile Glu Val Phe Met Asp Arg Arg Leu Met
945   950   955   960

Gln Asp Asp Asn Arg Gly Leu Gly Gln Gly Val His Asp Asn Lys Ile
                965   970   975

Thr Ala Asn Leu Phe Arg Ile Leu Leu Glu Lys Arg Ser Ala Val Asn
                980   985   990

Met Glu Glu Glu Lys Lys Ser Pro Val Ser Tyr Pro Ser Leu Leu Ser
            995   1000   1005

His Met Thr Ser Ser Phe Leu Asn His Pro Phe Leu Pro Met Val Leu
    1010   1015   1020

Ser Gly Gln Leu Pro Ser Pro Ala Phe Glu Leu Leu Ser Glu Phe Pro
1025   1030   1035   1040

Leu Leu Gln Ser Ser Leu Pro Cys Asp Ile His Leu Val Asn Leu Arg
                1045   1050   1055

Thr Ile Gln Ser Lys Met Gly Lys Gly Tyr Ser Asp Glu Ala Ala Leu
                1060   1065   1070

Ile Leu His Arg Lys Gly Phe Asp Cys Gln Phe Ser Ser Arg Gly Ile
        1075   1080   1085

Gly Leu Pro Cys Ser Thr Thr Gln Gly Lys Met Ser Val Leu Lys Leu
    1090   1095   1100

Phe Asn Lys Phe Ala Val Glu Ser Leu Val Pro Ser Ser Leu Ser Leu
1105   1110   1115   1120

Met His Ser Pro Pro Asp Ala Gln Asn Met Ser Glu Val Ser Leu Ser
                1125   1130   1135

Pro Met Glu Ile Ser Thr Phe Arg Ile Arg Leu Arg Trp Thr
            1140   1145   1150

<210> 99
<211> 1139
<212> PRT
<213> Homo sapiens

<400> 99
Met Lys Leu Lys Lys Gln Val Thr Val Cys Gly Ala Ala Ile Phe Cys
    1   5   10   15

Val Ala Val Phe Ser Leu Tyr Leu Met Leu Asp Arg Val Gln His Asp
       20   25   30

Pro Thr Arg His Gln Asn Gly Gly Asn Phe Pro Arg Ser Gln Ile Ser
       35   40   45

Val Leu Gln Asn Arg Ile Glu Gln Leu Glu Gln Leu Leu Glu Glu Asn
     50   55   60

His Glu Ile Ile Ser His Ile Lys Asp Ser Val Leu Glu Leu Thr Ala
65   70   75   80

Asn Ala Glu Gly Pro Pro Ala Met Leu Pro Tyr Tyr Thr Val Asn Gly
          85   90   95

Ser Trp Val Val Pro Pro Glu Pro Arg Pro Ser Phe Phe Ser Ile Ser
        100   105   110

Pro Gln Asp Cys Gln Phe Ala Leu Gly Gly Arg Gly Gln Lys Pro Glu
       115   120   125

Leu Gln Met Leu Thr Val Ser Glu Glu Leu Pro Phe Asp Asn Val Asp
     130   135   140

Gly Gly Val Trp Arg Gln Gly Phe Asp Ile Ser Tyr Asp Pro His Asp
145   150   155   160

Trp Asp Ala Glu Asp Leu Gln Val Phe Val Val Pro His Ser His Asn
          165   170   175

Asp Pro Gly Trp Ile Lys Thr Phe Asp Lys Tyr Tyr Thr Glu Gln Thr
          180   185   190

Gln His Ile Leu Asn Ser Met Val Ser Lys Leu Gln Glu Asp Pro Arg
       195   200   205

Arg Arg Phe Leu Trp Ala Glu Val Ser Phe Phe Ala Lys Trp Trp Asp
     210   215   220

Asn Ile Asn Val Gln Lys Arg Ala Ala Val Arg Arg Leu Val Gly Asn
225   230   235   240

Gly Gln Leu Glu Ile Ala Thr Gly Gly Trp Val Met Pro Asp Glu Ala
          245   250   255

Asn Ser His Tyr Phe Ala Leu Ile Asp Gln Leu Ile Glu Gly His Gln
          260   265   270

Trp Leu Glu Arg Asn Leu Gly Ala Thr Pro Arg Ser Gly Trp Ala Val
       275   280   285

Asp Pro Phe Gly Tyr Ser Ser Thr Met Pro Tyr Leu Leu Arg Arg Ala
     290   295   300

Asn Leu Thr Ser Met Leu Ile Gln Arg Val His Tyr Ala Ile Lys Lys
305   310   315   320

His Phe Ala Ala Thr His Ser Leu Glu Phe Met Trp Arg Gln Thr Trp
                325   330   335

Asp Ser Asp Ser Ser Thr Asp Ile Phe Cys His Met Met Pro Phe Tyr
                340   345   350

Ser Tyr Asp Val Pro His Thr Cys Gly Pro Asp Pro Lys Ile Cys Cys
            355   360   365

Gln Phe Asp Phe Lys Arg Leu Pro Gly Gly Arg Ile Asn Cys Pro Trp
        370   375   380

Lys Val Pro Pro Arg Ala Ile Thr Glu Ala Asn Val Ala Glu Arg Ala
385   390   395   400

Ala Leu Leu Leu Asp Gln Tyr Arg Lys Lys Ser Gln Leu Phe Arg Ser
                405   410   415

Asn Val Leu Leu Val Pro Leu Gly Asp Asp Phe Arg Tyr Asp Lys Pro
            420   425   430

Gln Glu Trp Asp Ala Gln Phe Phe Asn Tyr Gln Arg Leu Phe Asp Phe
        435   440   445

Phe Asn Ser Arg Pro Asn Leu His Val Gln Ala Gln Phe Gly Thr Leu
    450   455   460

Ser Asp Tyr Phe Asp Ala Leu Tyr Lys Arg Thr Gly Val Glu Pro Gly
465   470   475   480

Ala Arg Pro Pro Gly Phe Pro Val Leu Ser Gly Asp Phe Phe Ser Tyr
                485   490   495

Ala Asp Arg Glu Asp His Tyr Trp Thr Gly Tyr Tyr Thr Ser Arg Pro
                500   505   510

Phe Tyr Lys Ser Leu Asp Arg Val Leu Glu Ala His Leu Arg Gly Ala
        515   520   525

Glu Val Leu Tyr Ser Leu Ala Ala Ala His Ala Arg Arg Ser Gly Leu
        530   535   540

Ala Gly Arg Tyr Pro Leu Ser Asp Phe Thr Leu Leu Thr Glu Ala Arg
545   550   555   560

Arg Thr Leu Gly Leu Phe Gln His His Asp Ala Ile Thr Gly Thr Ala
                565   570   575

Lys Glu Ala Val Val Val Asp Tyr Gly Val Arg Leu Leu Arg Ser Leu
                580   585   590

Val Asn Leu Lys Gln Val Ile Ile His Ala Ala His Tyr Leu Val Leu
        595   600   605

Gly Asp Lys Glu Thr Tyr His Phe Asp Pro Glu Ala Pro Phe Leu Gln
    610   615   620

Val Asp Asp Thr Arg Leu Ser His Asp Ala Leu Pro Glu Arg Thr Val
625   630   635   640

Ile Gln Leu Asp Ser Ser Pro Arg Phe Val Val Leu Phe Asn Pro Leu
            645   650   655

Glu Gln Glu Arg Phe Ser Met Val Ser Leu Leu Val Asn Ser Pro Arg
            660   665   670

Val Arg Val Leu Ser Glu Glu Gly Gln Pro Leu Ala Val Gln Ile Ser
    675   680   685

Ala His Trp Ser Ser Ala Thr Glu Ala Val Pro Asp Val Tyr Gln Val
    690   695   700

Ser Val Pro Val Arg Leu Pro Ala Leu Gly Leu Gly Val Leu Gln Leu
705   710   715   720

Gln Leu Gly Leu Asp Gly His Arg Thr Leu Pro Ser Ser Val Arg Ile
            725   730   735

Tyr Leu His Gly Arg Gln Leu Ser Val Ser Arg His Glu Ala Phe Pro
        740   745   750

Leu Arg Val Ile Asp Ser Gly Thr Ser Asp Phe Ala Leu Ser Asn Arg
    755   760   765

Tyr Met Gln Val Trp Phe Ser Gly Leu Thr Gly Leu Leu Lys Ser Ile
    770   775   780

Arg Arg Val Asp Glu Glu His Glu Gln Gln Val Asp Met Gln Val Leu
785   790   795   800

Val Tyr Gly Thr Arg Thr Ser Lys Asp Lys Ser Gly Ala Tyr Leu Phe
            805   810   815

Leu Pro Asp Gly Glu Ala Ser Pro Thr Ser Pro Arg Ser Pro Pro Cys
        820   825   830

Cys Val Ser Leu Lys Ala Leu Ser Ser Gln Arg Trp Leu Arg Thr Met
        835   840   845

Ser Thr Phe Thr Arg Arg Ser Gly Phe Thr Ile Cys Gln Gly Trp Arg
    850   855   860

Gly Cys Leu Trp Thr Tyr His Pro Trp Trp Thr Ser Gly Thr Thr Ser
865   870   875   880

Thr Arg Ser Trp Pro Cys Thr Ser Ile Gln Thr Ser Thr Ala Arg Val
            885   890   895

Gln Pro Arg Arg Tyr Leu Lys Lys Leu Pro Leu Gln Ala Asn Phe Tyr
            900   905   910

Pro Met Pro Val Met Ala Tyr Ile Gln Asp Ala Gln Lys Arg Leu Thr
            915   920   925

Leu His Thr Ala Gln Ala Leu Gly Val Ser Ser Leu Lys Asp Gly Gln
    930   935   940

Leu Glu Val Ile Leu Asp Arg Arg Leu Met Gln Asp Asp Asn Arg Gly
945   950   955   960

Leu Gly Gln Gly Leu Lys Asp Asn Lys Arg Thr Cys Asn Arg Phe Arg
            965   970   975

Leu Leu Leu Glu Arg Arg Thr Val Gly Ser Glu Val Gln Asp Ser His
            980   985   990

Ser Thr Ser Tyr Pro Ser Leu Leu Ser His Leu Thr Ser Met Tyr Leu
        995   1000   1005

Asn Ala Pro Ala Leu Ala Leu Pro Val Ala Arg Met Gln Leu Pro Gly
    1010   1015   1020

Pro Gly Leu Arg Ser Phe His Pro Leu Ala Ser Ser Leu Pro Cys Asp
1025   1030   1035   1040

Phe His Leu Leu Asn Leu Arg Thr Leu Gln Ala Glu Glu Asp Thr Leu
            1045   1050   1055

Pro Ser Ala Glu Thr Ala Leu Ile Leu His Arg Lys Gly Phe Asp Cys
        1060   1065   1070

Gly Leu Glu Ala Lys Asn Leu Gly Phe Asn Cys Thr Thr Ser Gln Gly
        1075   1080   1085

Lys Val Ala Leu Gly Ser Leu Phe His Gly Leu Asp Val Val Phe Leu
    1090   1095   1100

Gln Pro Thr Ser Leu Thr Leu Leu Tyr Pro Leu Ala Ser Pro Ser Asn
1105   1110   1115   1120

Ser Thr Asp Val Tyr Leu Glu Pro Met Glu Ile Ala Thr Phe Arg Leu
            1125   1130   1135

Arg Leu Gly

<210> 100
<211> 1130
<212> PRT
<213> Spodoptera frugiperda

<400> 100

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Met Arg Thr Arg Val Leu Arg Cys Arg Pro Phe Ser Thr Arg Ile Leu
 1               5                  10                  15

Leu Leu Leu Leu Phe Val Leu Ala Phe Gly Val Tyr Cys Tyr Phe Tyr
            20                  25                  30

Asn Ala Ser Pro Gln Asn Tyr Asn Lys Pro Arg Ile Ser Tyr Pro Ala
        35                  40                  45

Ser Met Glu His Phe Lys Ser Ser Leu Thr His Thr Val Lys Ser Arg
        50                  55                  60

Asp Glu Pro Thr Pro Asp Gln Cys Pro Ala Leu Lys Glu Ser Glu Ala
 65                  70                  75                  80

Asp Ile Asp Thr Val Ala Ile Tyr Pro Thr Phe Asp Phe Gln Pro Ser
                85                  90                  95

Trp Leu Arg Thr Lys Glu Phe Trp Asp Lys Ser Phe Glu Asp Arg Tyr
            100                 105                 110

Glu Arg Ile His Asn Asp Thr Thr Arg Pro Arg Leu Lys Val Ile Val
            115                 120                 125

Val Pro His Ser His Asn Asp Pro Gly Trp Leu Lys Thr Phe Glu Gln
    130                 135                 140

Tyr Phe Glu Trp Lys Thr Lys Asn Ile Ile Asn Asn Ile Val Asn Lys
145                 150                 155                 160

Leu His Gln Tyr Pro Asn Met Thr Phe Ile Trp Thr Glu Ile Ser Phe
                165                 170                 175

Leu Asn Ala Trp Trp Glu Arg Ser His Pro Val Lys Gln Lys Ala Leu
            180                 185                 190

Lys Lys Leu Ile Lys Glu Gly Arg Leu Glu Ile Thr Thr Gly Gly Trp
            195                 200                 205

Val Met Pro Asp Glu Ala Cys Thr His Ile Tyr Ala Leu Ile Asp Gln
    210                 215                 220

Phe Ile Glu Gly His His Trp Val Lys Thr Asn Leu Gly Val Ile Pro
225                 230                 235                 240

Lys Thr Gly Trp Ser Ile Asp Pro Phe Gly His Gly Ala Thr Val Pro
                245                 250                 255
```

Tyr Leu Leu Asp Gln Ser Gly Leu Glu Gly Thr Ile Ile Gln Arg Ile
        260   265   270

His Tyr Ala Trp Lys Gln Trp Leu Ala Glu Arg Gln Ile Glu Glu Phe
        275   280   285

Tyr Trp Leu Ala Ser Trp Ala Thr Thr Lys Pro Ser Met Ile Val His
    290   295   300

Asn Gln Pro Phe Asp Ile Tyr Ser Ile Lys Ser Thr Cys Gly Pro His
305   310   315   320

Pro Ser Ile Cys Leu Ser Phe Asp Phe Arg Lys Ile Pro Gly Glu Tyr
                325   330   335

Ser Glu Tyr Thr Ala Lys His Glu Asp Ile Thr Glu His Asn Leu His
            340   345   350

Ser Lys Ala Lys Thr Leu Ile Glu Glu Tyr Asp Arg Ile Gly Ser Leu
        355   360   365

Thr Pro His Asn Val Val Leu Val Pro Leu Gly Asp Asp Phe Arg Tyr
    370   375   380

Glu Tyr Ser Val Glu Phe Asp Ala Gln Tyr Val Asn Tyr Met Lys Met
385   390   395   400

Phe Asn Tyr Ile Asn Ala His Lys Glu Ile Phe Asn Ala Asp Val Gln
                405   410   415

Phe Gly Thr Pro Leu Asp Tyr Phe Asn Ala Met Lys Glu Arg His Gln
            420   425   430

Asn Ile Pro Ser Leu Lys Gly Asp Phe Phe Val Tyr Ser Asp Ile Phe
        435   440   445

Ser Glu Gly Lys Pro Ala Tyr Trp Ser Gly Tyr Tyr Thr Thr Arg Pro
    450   455   460

Tyr Gln Lys Ile Leu Ala Arg Gln Phe Glu His Gln Leu Arg Ser Ala
465   470   475   480

Glu Ile Leu Phe Thr Leu Val Ser Asn Tyr Ile Arg Gln Met Gly Arg
        485   490   495

Gln Gly Glu Phe Gly Ala Ser Glu Lys Lys Leu Glu Lys Ser Tyr Glu
            500   505   510

Gln Leu Ile Tyr Ala Arg Arg Asn Leu Gly Leu Phe Gln His His Asp
        515   520   525

Ala Ile Thr Gly Thr Ser Lys Ser Ser Val Met Gln Asp Tyr Gly Thr
    530   535   540

```
Lys Leu Phe Thr Ser Leu Tyr His Cys Ile Arg Leu Gln Glu Ala Ala
545             550             555             560

Leu Thr Thr Ile Met Leu Pro Asp Gln Ser Leu His Ser Gln Ser Ile
                565             570             575

Ile Gln Ser Glu Val Glu Trp Glu Thr Tyr Gly Lys Pro Pro Lys Lys
            580             585             590

Leu Gln Val Ser Phe Ile Asp Lys Lys Lys Val Ile Leu Phe Asn Pro
            595             600             605

Leu Ala Glu Thr Arg Thr Glu Val Val Thr Val Arg Ser Asn Thr Ser
    610             615             620

Asn Ile Arg Val Tyr Asp Thr His Lys Arg Lys His Val Leu Tyr Gln
625             630             635             640

Ile Met Pro Ser Ile Thr Ile Gln Asp Asn Gly Lys Ser Ile Val Ser
                645             650             655

Asp Thr Thr Phe Asp Ile Met Phe Val Ala Thr Ile Pro Pro Leu Thr
            660             665             670

Ser Ile Ser Tyr Lys Leu Gln Glu His Thr Asn Thr Ser His His Cys
    675             680             685

Val Ile Phe Cys Asn Asn Cys Glu Gln Tyr Gln Lys Ser Asn Val Phe
    690             695             700

Gln Ile Lys Lys Met Met Pro Gly Asp Ile Gln Leu Glu Asn Ala Val
705             710             715             720

Leu Lys Leu Leu Val Asn Arg Asn Thr Gly Phe Leu Arg Gln Val Tyr
            725             730             735

Arg Lys Asp Ile Arg Lys Arg Thr Val Val Asp Val Gln Phe Gly Ala
            740             745             750

Tyr Gln Ser Ala Gln Arg His Ser Gly Ala Tyr Leu Phe Met Pro His
    755             760             765

Tyr Asp Ser Pro Glu Lys Asn Val Leu His Pro Tyr Thr Asn Gln Asn
    770             775             780

Asn Met Gln Asp Asp Asn Ile Ile Ile Val Ser Gly Pro Ile Ser Thr
785             790             795             800

Glu Ile Thr Thr Met Tyr Leu Pro Phe Leu Val His Thr Ile Arg Ile
                805             810             815

Tyr Asn Val Pro Asp Pro Val Leu Ser Arg Ala Ile Leu Leu Glu Thr
            820             825             830
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Asp Val Asp Phe Glu Ala Pro Pro Lys Asn Arg Glu Thr Glu Leu Phe
    835   840   845

Met Arg Leu Gln Thr Asp Ile Gln Asn Gly Asp Ile Pro Glu Phe Tyr
    850   855   860

Thr Asp Gln Asn Gly Phe Gln Tyr Gln Lys Arg Val Lys Val Asn Lys
865   870   875   880

Leu Gly Ile Glu Ala Asn Tyr Tyr Pro Ile Thr Thr Met Ala Cys Leu
            885   890   895

Gln Asp Glu Glu Thr Arg Leu Thr Leu Leu Thr Asn His Ala Gln Gly
            900   905   910

Ala Ala Ala Tyr Glu Pro Gly Arg Leu Glu Val Met Leu Asp Arg Arg
            915   920   925

Thr Leu Tyr Asp Asp Phe Arg Gly Ile Gly Glu Gly Val Val Asp Asn
    930   935   940

Lys Pro Thr Thr Phe Gln Asn Trp Ile Leu Ile Glu Ser Met Pro Gly
945   950   955   960

Val Thr Arg Ala Lys Arg Asp Thr Ser Glu Pro Gly Phe Lys Phe Val
            965   970   975

Asn Glu Arg Arg Phe Gly Pro Gly Gln Lys Glu Ser Pro Tyr Gln Val
            980   985   990

Pro Ser Gln Thr Ala Asp Tyr Leu Ser Arg Met Phe Asn Tyr Pro Val
            995   1000   1005

Asn Val Tyr Leu Val Asp Thr Ser Glu Val Gly Glu Ile Glu Val Lys
    1010   1015   1020

Pro Tyr Gln Ser Phe Leu Gln Ser Phe Pro Pro Gly Ile His Leu Val
1025   1030   1035   1040

Thr Leu Arg Thr Ile Thr Asp Asp Val Leu Glu Leu Phe Pro Ser Asn
            1045   1050   1055

Glu Ser Tyr Met Val Leu His Arg Pro Gly Tyr Ser Cys Ala Val Gly
            1060   1065   1070

Glu Lys Pro Val Ala Lys Ser Pro Lys Phe Ser Ser Lys Thr Arg Phe
            1075   1080   1085

Asn Gly Leu Asn Ile Gln Asn Ile Thr Ala Val Ser Leu Thr Gly Leu
    1090   1095   1100

Lys Ser Leu Arg Pro Leu Thr Gly Leu Ser Asp Ile His Leu Asn Ala
1105   1110   1115   1120

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Met Glu Val Lys Thr Tyr Lys Ile Arg Phe
              1125              1130
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<210> 101
<211> 1010
<212> PRT
<213> Homo sapiens

<400> 101
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Met Gly Tyr Ala Arg Ala Ser Gly Val Cys Ala Arg Gly Cys Leu Asp
 1               5                  10                  15

Ser Ala Gly Pro Trp Thr Met Ser Arg Ala Leu Arg Pro Pro Leu Pro
              20                  25                  30

Pro Leu Cys Phe Phe Leu Leu Leu Leu Ala Ala Ala Gly Ala Arg Ala
              35                  40                  45

Gly Gly Tyr Glu Thr Cys Pro Thr Val Gln Pro Asn Met Leu Asn Val
      50                  55                  60

His Leu Leu Pro His Thr His Asp Asp Val Gly Trp Leu Lys Thr Val
 65                  70                  75                  80

Asp Gln Tyr Phe Tyr Gly Ile Lys Asn Asp Ile Gln His Ala Gly Val
                  85                  90                  95

Gln Tyr Ile Leu Asp Ser Val Ile Ser Ala Leu Leu Ala Asp Pro Thr
              100                 105                 110

Arg Arg Phe Ile Tyr Val Glu Ile Ala Phe Phe Ser Arg Trp Trp His
              115                 120                 125

Gln Gln Thr Asn Ala Thr Gln Glu Val Val Arg Asp Leu Val Arg Gln
    130                 135                 140

Gly Arg Leu Glu Phe Ala Asn Gly Gly Trp Val Met Asn Asp Glu Ala
145                 150                 155                 160

Ala Thr His Tyr Gly Ala Ile Val Asp Gln Met Thr Leu Gly Leu Arg
              165                 170                 175

Phe Leu Glu Asp Thr Phe Gly Asn Asp Gly Arg Pro Arg Val Ala Trp
              180                 185                 190

His Ile Asp Pro Phe Gly His Ser Arg Glu Gln Ala Ser Leu Phe Ala
              195                 200                 205

Gln Met Gly Phe Asp Gly Phe Phe Phe Gly Arg Leu Asp Tyr Gln Asp
    210                 215                 220
```

Lys Trp Val Arg Met Gln Lys Leu Glu Met Glu Gln Val Trp Arg Ala
225   230   235   240

Ser Thr Ser Leu Lys Pro Pro Thr Ala Asp Leu Phe Thr Gly Val Leu
            245   250   255

Pro Asn Gly Tyr Asn Pro Pro Arg Asn Leu Cys Trp Asp Val Leu Cys
        260   265   270

Val Asp Gln Pro Leu Val Glu Asp Pro Arg Ser Pro Glu Tyr Asn Ala
        275   280   285

Lys Glu Leu Val Asp Tyr Phe Leu Asn Val Ala Thr Ala Gln Gly Arg
    290   295   300

Tyr Tyr Arg Thr Asn His Thr Val Met Thr Met Gly Ser Asp Phe Gln
305   310   315   320

Tyr Glu Asn Ala Asn Met Trp Phe Lys Asn Leu Asp Lys Leu Ile Arg
            325   330   335

Leu Val Asn Ala Gln Gln Ala Lys Gly Ser Ser Val His Val Leu Tyr
            340   345   350

Ser Thr Pro Ala Cys Tyr Leu Trp Glu Leu Asn Lys Ala Asn Leu Thr
        355   360   365

Trp Ser Val Lys His Asp Asp Phe Phe Pro Tyr Ala Asp Gly Pro His
    370   375   380

Gln Phe Trp Thr Gly Tyr Phe Ser Ser Arg Pro Ala Leu Lys Arg Tyr
385   390   395   400

Glu Arg Leu Ser Tyr Asn Phe Leu Gln Val Cys Asn Gln Leu Glu Ala
            405   410   415

Leu Val Gly Leu Ala Ala Asn Val Gly Pro Tyr Gly Ser Gly Asp Ser
            420   425   430

Ala Pro Leu Asn Glu Ala Met Ala Val Leu Gln His His Asp Ala Val
        435   440   445

Ser Gly Thr Ser Arg Gln His Val Ala Asn Asp Tyr Ala Arg Gln Leu
    450   455   460

Ala Ala Gly Trp Gly Pro Cys Glu Val Leu Leu Ser Asn Ala Leu Ala
465   470   475   480

Arg Leu Arg Gly Phe Lys Asp His Phe Thr Phe Cys Gln Gln Leu Asn
            485   490   495

Ile Ser Ile Cys Pro Leu Ser Gln Thr Ala Ala Arg Phe Gln Val Ile
        500   505   510

Val Tyr Asn Pro Leu Gly Arg Lys Val Asn Trp Met Val Arg Leu Pro
    515   520   525

Val Ser Glu Gly Val Phe Val Val Lys Asp Pro Asn Gly Arg Thr Val
    530   535   540

Pro Ser Asp Val Val Ile Phe Pro Ser Ser Asp Ser Gln Ala His Pro
545   550   555   560

Pro Glu Leu Leu Phe Ser Ala Ser Leu Pro Ala Leu Gly Phe Ser Thr
         565   570   575

Tyr Ser Val Ala Gln Val Pro Arg Trp Lys Pro Gln Ala Arg Ala Pro
      580   585   590

Gln Pro Ile Pro Arg Arg Ser Trp Ser Pro Ala Leu Thr Ile Glu Asn
      595   600   605

Glu His Ile Arg Ala Thr Phe Asp Pro Asp Thr Gly Leu Leu Met Glu
    610   615   620

Ile Met Asn Met Asn Gln Gln Leu Leu Leu Pro Val Arg Gln Thr Phe
625   630   635   640

Phe Trp Tyr Asn Ala Ser Ile Gly Asp Asn Glu Ser Asp Gln Ala Ser
         645   650   655

Gly Ala Tyr Ile Phe Arg Pro Asn Gln Gln Lys Pro Leu Pro Val Ser
         660   665   670

Arg Trp Ala Gln Ile His Leu Val Lys Thr Pro Leu Val Gln Glu Val
      675   680   685

His Gln Asn Phe Ser Ala Trp Cys Ser Gln Val Val Arg Leu Tyr Pro
    690   695   700

Gly Gln Arg His Leu Glu Leu Glu Trp Ser Val Gly Pro Ile Pro Val
705   710   715   720

Gly Asp Thr Trp Gly Lys Glu Val Ile Ser Arg Phe Asp Thr Pro Leu
         725   730   735

Glu Thr Lys Gly Arg Phe Tyr Thr Asp Ser Asn Gly Arg Glu Ile Leu
         740   745   750

Glu Arg Arg Arg Asp Tyr Arg Pro Thr Trp Lys Leu Asn Gln Thr Glu
      755   760   765

Pro Val Ala Gly Asn Tyr Tyr Pro Val Asn Thr Arg Ile Tyr Ile Thr
    770   775   780

Asp Gly Asn Met Gln Leu Thr Val Leu Thr Asp Arg Ser Gln Gly Gly
785   790   795   800

Ser Ser Leu Arg Asp Gly Ser Leu Glu Leu Met Val His Arg Arg Leu
            805   810   815

Leu Lys Asp Asp Gly Arg Gly Val Ser Glu Pro Leu Met Glu Asn Gly
            820   825   830

Ser Gly Ala Trp Val Arg Gly Arg His Leu Val Leu Leu Asp Thr Ala
            835   840   845

Gln Ala Ala Ala Ala Gly His Arg Leu Leu Ala Glu Gln Glu Val Leu
            850   855   860

Ala Pro Gln Val Val Leu Ala Pro Gly Gly Gly Ala Ala Tyr Asn Leu
865   870   875   880

Gly Ala Pro Pro Arg Thr Gln Phe Ser Gly Leu Arg Arg Asp Leu Pro
                885   890   895

Pro Ser Val His Leu Leu Thr Leu Ala Ser Trp Gly Pro Glu Met Val
            900   905   910

Leu Leu Arg Leu Glu His Gln Phe Ala Val Gly Glu Asp Ser Gly Arg
            915   920   925

Asn Leu Ser Ala Pro Val Thr Leu Asn Leu Arg Asp Leu Phe Ser Thr
    930   935   940

Phe Thr Ile Thr Arg Leu Gln Glu Thr Thr Leu Val Ala Asn Gln Leu
945   950   955   960

Arg Glu Ala Ala Ser Arg Leu Lys Trp Thr Thr Asn Thr Gly Pro Thr
                965   970   975

Pro His Gln Thr Pro Tyr Gln Leu Asp Pro Ala Asn Ile Thr Leu Glu
            980   985   990

Pro Met Glu Ile Arg Thr Phe Leu Ala Ser Val Gln Trp Lys Glu Val
            995   1000   1005

Asp Gly
    1010

<210> 102
<211> 1062
<212> PRT
<213> Homo sapiens

<400> 102
Met Ala Ala Ala Pro Phe Leu Lys His Trp Arg Thr Thr Phe Glu Arg
    1   5   10   15

Val Glu Lys Phe Val Ser Pro Ile Tyr Phe Thr Asp Cys Asn Leu Arg
       20   25   30

Gly Arg Leu Phe Gly Ala Ser Cys Pro Val Ala Val Leu Ser Ser Phe
       35   40   45

Leu Thr Pro Glu Arg Leu Pro Tyr Gln Glu Ala Val Gln Arg Asp Phe
    50   55   60

Arg Pro Ala Gln Val Gly Asp Ser Phe Gly Pro Thr Trp Trp Thr Cys
65   70   75   80

Trp Phe Arg Val Glu Leu Thr Ile Pro Glu Ala Trp Val Gly Gln Glu
          85   90   95

Val His Leu Cys Trp Glu Ser Asp Gly Glu Gly Leu Val Trp Arg Asp
        100   105   110

Gly Glu Pro Val Gln Gly Leu Thr Lys Glu Gly Glu Lys Thr Ser Tyr
        115   120   125

Val Leu Thr Asp Arg Leu Gly Glu Arg Asp Pro Arg Ser Leu Thr Leu
    130   135   140

Tyr Val Glu Val Ala Cys Asn Gly Leu Leu Gly Ala Gly Lys Gly Ser
145   150   155   160

Met Ile Ala Ala Pro Asp Pro Glu Lys Ile Phe Gln Leu Ser Arg Ala
        165   170   175

Glu Leu Ala Val Phe His Arg Asp Val His Met Leu Leu Val Asp Leu
        180   185   190

Glu Leu Leu Leu Gly Ile Ala Lys Gly Leu Gly Lys Asp Asn Gln Arg
        195   200   205

Ser Phe Gln Ala Leu Tyr Thr Ala Asn Gln Met Val Asn Val Cys Asp
    210   215   220

Pro Ala Gln Pro Glu Thr Phe Pro Val Ala Gln Ala Leu Ala Ser Arg
225   230   235   240

Phe Phe Gly Gln His Gly Gly Glu Ser Gln His Thr Ile His Ala Thr
        245   250   255

Gly His Cys His Ile Asp Thr Ala Trp Leu Trp Pro Phe Lys Glu Thr
        260   265   270

Val Arg Lys Cys Ala Arg Ser Trp Val Thr Ala Leu Gln Leu Met Glu
        275   280   285

Arg Asn Pro Glu Phe Ile Phe Ala Cys Ser Gln Ala Gln Gln Leu Glu
      290   295   300

Trp Val Lys Ser Arg Tyr Pro Gly Leu Tyr Ser Arg Ile Gln Glu Phe
305   310   315   320

Ala Cys Arg Gly Gln Phe Val Pro Val Gly Gly Thr Trp Val Glu Met
              325   330   335

Asp Gly Asn Leu Pro Ser Gly Glu Ala Met Val Arg Gln Phe Leu Gln
              340   345   350

Gly Gln Asn Phe Phe Leu Gln Glu Phe Gly Lys Met Cys Ser Glu Phe
              355   360   365

Trp Leu Pro Asp Thr Phe Gly Tyr Ser Ala Gln Leu Pro Gln Ile Met
    370   375   380

His Gly Cys Gly Ile Arg Arg Phe Leu Thr Gln Lys Leu Ser Trp Asn
385   390   395   400

Leu Val Asn Ser Phe Pro His His Thr Phe Phe Trp Glu Gly Leu Asp
              405   410   415

Gly Ser Arg Val Leu Val His Phe Pro Pro Gly Asp Ser Tyr Gly Met
              420   425   430

Gln Gly Ser Val Glu Glu Val Leu Lys Thr Val Ala Asn Asn Arg Asp
              435   440   445

Lys Gly Arg Ala Asn His Ser Ala Phe Leu Phe Gly Phe Gly Asp Gly
    450   455   460

Gly Gly Gly Pro Thr Gln Thr Met Leu Asp Arg Leu Lys Arg Leu Ser
465   470   475   480

Asn Thr Asp Gly Leu Pro Arg Val Gln Leu Ser Ser Pro Arg Gln Leu
              485   490   495

Phe Ser Ala Leu Glu Ser Asp Ser Glu Gln Leu Cys Thr Trp Val Gly
              500   505   510

Glu Leu Phe Leu Glu Leu His Asn Gly Thr Tyr Thr Thr His Ala Gln
    515   520   525

Ile Lys Lys Gly Asn Arg Glu Cys Glu Arg Ile Leu His Asp Val Glu
    530   535   540

Leu Leu Ser Ser Leu Ala Leu Ala Arg Ser Ala Gln Phe Leu Tyr Pro
545   550   555   560

Ala Ala Gln Leu Gln His Leu Trp Arg Leu Leu Leu Asn Gln Phe
              565   570   575

His Asp Val Val Thr Gly Ser Cys Ile Gln Met Val Ala Glu Glu Ala
              580   585   590

Met Cys His Tyr Glu Asp Ile Arg Ser His Gly Asn Thr Leu Leu Ser
    595   600   605

Ala Ala Ala Ala Ala Leu Cys Ala Gly Glu Pro Gly Pro Glu Gly Leu
    610   615   620

Leu Ile Val Asn Thr Leu Pro Trp Lys Arg Ile Glu Val Met Ala Leu
625   630   635   640

Pro Lys Pro Gly Gly Ala His Ser Leu Ala Leu Val Thr Val Pro Ser
          645   650   655

Met Gly Tyr Ala Pro Val Pro Pro Thr Ser Leu Gln Pro Leu Leu
        660   665   670

Pro Gln Gln Pro Val Phe Val Val Gln Glu Thr Asp Gly Ser Val Thr
    675   680   685

Leu Asp Asn Gly Ile Ile Arg Val Lys Leu Asp Pro Thr Gly Arg Leu
    690   695   700

Thr Ser Leu Val Leu Val Ala Ser Gly Arg Glu Ala Ile Ala Glu Gly
705   710   715   720

Ala Val Gly Asn Gln Phe Val Leu Phe Asp Asp Val Pro Leu Tyr Trp
        725   730   735

Asp Ala Trp Asp Val Met Asp Tyr His Leu Glu Thr Arg Lys Pro Val
        740   745   750

Leu Gly Gln Ala Gly Thr Leu Ala Val Gly Thr Glu Gly Gly Leu Arg
        755   760   765

Gly Ser Ala Trp Phe Leu Leu Gln Ile Ser Pro Asn Ser Arg Leu Ser
    770   775   780

Gln Glu Val Val Leu Asp Val Gly Cys Pro Tyr Val Arg Phe His Thr
785   790   795   800

Glu Val His Trp His Glu Ala His Lys Phe Leu Lys Val Glu Phe Pro
        805   810   815

Ala Arg Val Arg Ser Ser Gln Ala Thr Tyr Glu Ile Gln Phe Gly His
        820   825   830

Leu Gln Arg Pro Thr His Tyr Asn Thr Ser Trp Asp Trp Ala Arg Phe
        835   840   845

Glu Val Trp Ala His Arg Trp Met Asp Leu Ser Glu His Gly Phe Gly
    850   855   860

Leu Ala Leu Leu Asn Asp Cys Lys Tyr Gly Ala Ser Val Arg Gly Ser
865   870   875   880

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Ile Leu Ser Leu Ser Leu Leu Arg Ala Pro Lys Ala Pro Asp Ala Thr
              885                 890                 895

Ala Asp Thr Gly Arg His Glu Phe Thr Tyr Ala Leu Met Pro His Lys
            900                 905                 910

Gly Ser Phe Gln Asp Ala Gly Val Ile Gln Ala Ala Tyr Ser Leu Asn
        915                 920                 925

Phe Pro Leu Leu Ala Leu Pro Ala Pro Ser Pro Ala Pro Ala Thr Ser
    930                 935                 940

Trp Ser Ala Phe Ser Val Ser Ser Pro Ala Val Val Leu Glu Thr Val
945                 950                 955                 960

Lys Gln Ala Glu Ser Ser Pro Gln Arg Arg Ser Leu Val Leu Arg Leu
            965                 970                 975

Tyr Glu Ala His Gly Ser His Val Asp Cys Trp Leu His Leu Ser Leu
            980                 985                 990

Pro Val Gln Glu Ala Ile Leu Cys Asp Leu Leu Glu Arg Pro Asp Pro
        995                 1000                1005

Ala Gly His Leu Thr Ser Gly Gln Pro Pro Glu Ala His Leu Phe Ser
    1010                1015                1020

Leu Pro Ser Ala Val Pro Val Ala Arg Ala Ser Ala Ser Ala Thr Leu
1025                1030                1035          ·    1040

Ser Pro Trp Gly Trp Gly Phe Val Cys Arg Arg Leu Trp Gly Leu Leu
            1045                1050                1055

Ile Ser Ala Ser Pro Ala
            1060
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<210> 103
<211> 26
<212> DNA
<213> Saccharomyces cerevisiae

<220>
<221> modified_base
<222> (9)
<223> a, c, g or t

<220>
<221> modified_base
<222> (12)
<223> a, c, g or t

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<220>
<221> modified_base
<222> (18)
<223> a, c, g or t

<400> 103
taytggmgng tngarcynga yathaa                                    26


<210> 104
<211> 20
<212> DNA
<213> Saccharomyces cerevisiae

<220>
<221> modified_base
<222> (6)
<223> a, c, g or t

<220>
<221> modified_base
<222> (12)
<223> a, c, g or t

<400> 104
gcrtcncccc anckytcrta                                          20



<210> 105
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide

<400> 105
His Asp Glu Leu
  1


<210> 106
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide
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<400> 106
Lys Asp Glu Leu
  1

<210> 107
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 107
gcggccgcgg atccccgggt accgagctcg aattcact   38

<210> 108
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 108
ggggcgcgcc ttaattaacg acctgcaggc atgcaagctt ggcgtaatca tggtcat   57

<210> 109
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 109
ttcctcgaga ttcaagcgaa tgagaataat g   31

<210> 110
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 110
ttgcggccgc gaagtttta aaggaaagag ata   33

<210> 111
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 111
ggcgcgccga gcccgctgac gccaccatcc gtgagaagag ggc   43

<210> 112
<211> 62
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 112
atgtggcggc ggccgccacc atgaacacta tccacataat aaaattaccg cttaactacg 60
cc   62

<210> 113
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 113
ggcgcgcccc acgcctagca cttttatgga atctacgcta ggtac   45

<210> 114
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 114
agtaaaatgc ggccgccacc atgctgctta ccaaaaggtt ttcaaagctg ttc   53

<210> 115
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      primer

<400> 115
ggcgcgcccc gacgtgttct catccatgta tttgtttgta atgac   45

<210> 116
<211> 25
<212> DNA
<213> Rattus norvegicus

<400> 116
ttcctcactg cagtcttcta taact   25

<210> 117
<211> 26
<212> DNA
<213> Rattus norvegicus

<400> 117
tggagaccat gaggttccgc atctac   26

<210> 118
<211> 35
<212> DNA
<213> Rattus norvegicus

<400> 118
ttggcgcgcc tccctagtgt accagttgaa ctttg   35

<210> 119
<211> 32
<212> DNA
<213> Rattus norvegicus

<400> 119
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